CURTIS'S
BOTANICAL MAGAZINE,

COMPRISING THE

Plants of the Royal Gardens of Kew,

AND

OF OTHER BOTANICAL ESTABLISHMENTS IN GREAT BRITAIN;
WITH SUITABLE DESCRIPTIONS;

BY

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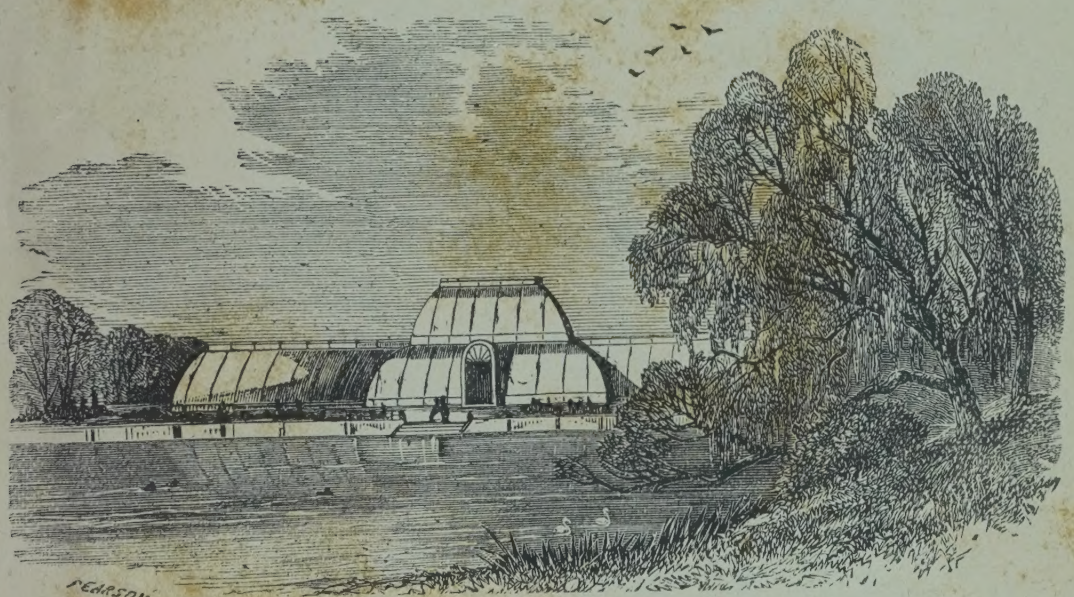
VOL. XLV.
OF THE THIRD SERIES.
(*Or Vol. CXV. of the Whole Work.*)



"What more felicitie can fall to creature
Than to enjoy delight with libertie,
And to be lord of all the workes of Nature,
To raine in th' aire from earth to highest skie,
To feed on flowers and weeds of glorious feature."
SPENSER.

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TO

ISAAC BAYLEY BALFOUR, D.Sc., M.D., F.R.S., &c., &c.,

Professor of Botany in the University of Edinburgh.

My dear Balfour,

When, in 1872, I dedicated to my old and valued friend, your father, the Ninety-eighth Volume of the Botanical Magazine, your career as a student of Botany in the University of Edinburgh encouraged me to hope that I might live to add your name to those of the distinguished cultivators of that science whose services as such it has been my father's and my own privilege to commemorate in successive volumes of this work.

My hopes have been abundantly realized. As an investigator of the Natural History of Rodriguez and of Socotra, and as a describer of the vegetation of those remarkable islands, you have shown yourself to be a very able botanist. As Professor of Botany successively in the Universities of Glasgow and of Oxford, you have left your mark on the museums and gardens of those venerable institutions; and it only remains for me to express the hope that the arduous duties of the chair you now hold, the greatest and most influential Botanical Chair in the Queen's dominions, may leave you leisure to continue as you began to reap laurels in the field of original research.

Believe me, my dear Balfour,

Sincerely yours,

JOS. D. HOOKER.

Royal Gardens, Kew,
December 1*st*, 1889.

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Tab. 7033.

BROWNEA macrophylla.

Native of New Grenada.

Nat. Ord. Leguminosæ.—Tribe Amherstieæ.

Genus Brownea, *Jacq.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 577.)

Brownea *macrophylla*; ramulis petiolis petiolulisque brevibus ferrugineo-lanatis, foliolis 5-jugis oblongis obovato-oblongis oblanceolatisve caudato-acuminatis glaberrimis, capitulis maximis basin versus trunci sessilibus multi-densiflоris, bracteis exterioribus amplis rotundatis interioribus oblanceolato-spathulatis pubescentibus, bracteolis 2 in tubum 2-fidum connatis, calycis lobis liberis v. varie connatis, petalis staminibus multoties brevioribus anguste unguiculatis oblongis obovatisve vexillo 2-fido, staminibus 10–12 longissimis, ovario tomentoso.

B. macrophylla, *Masters in Gard. Chron.* 1873, p. 777, fig. 149; *The Garden*, vol. xv. p. 436, t. 182.

B. antioquensis, *Linden Catal.* No. xxiii. p. 3 (name only).

By far the handsomest of hitherto known *Browneas*, though from the habit, hereafter to be alluded to, of bearing its flowers at the base of the trunk, and of their short duration, it is little likely to be cultivated for its flowers. Dr. Masters, who was the first to describe it, adopting the name it bore in the garden of its owner, Mr. Crawford of Lakeville, near Cork, states that he strongly suspects it to be *B. cauliflora*, Poepp. and Endlicher, a native of Peru, which he says differs in the white flower and more numerous (fifteen) stamens; but far more important characters than these are the perfectly glabrous branches and petioles of *B. cauliflora*, its leaves not being acuminate, its very small heads, its short calyx-tube, and its silky petals. *B. cauliflora* is further a native of Maynas in the Peruvian Andes, whilst Linden's name for *B. macrophylla* shows it to be a native of New Grenada.

Shortly before his lamented death, Mr. Crawford, whose gardens are celebrated for the number of fine plants that have flowered there for the first time, notably several species of *Brownea*, and the *Magnolia Campbellii* (Tab. nost. 6793), wrote of this plant that it grew in a lean-to

house with a high stage on which are Cattleias, Lælias, and other Orchids, that shut out much of the light, and most of the flowers seemed to prefer the dark, and grow close to the ground in the darkest part of the house; also that it blossomed first in the coldest weather, and the blossoms lasted for only two days. The heads of flowers attain a circumference of three feet, and ripe seeds have been produced that germinated and produced young plants. Mr. Crawford further succeeded in crossing it with *B. grandiceps*, the result of which is a great improvement on *grandiceps*, the flowers lasting longer than those of the parents.

The specimen figured here was sent to Kew in March last by Mr. Crawford very shortly before his death. Dr. Masters describes the tree as being (in 1877) about thirty feet high and unbranched for ten feet. A specimen of the same plant in the Kew Herbarium is marked as collected in Antioquia by Mr. Jervise.

Descr. A small tree, attaining thirty feet in height in Mr. Crawford's garden, with a crooked trunk. *Branches*, petioles and petiolules clothed with a dense brown tomentum. *Leaves* about a foot long; petiole terete, slender; leaflets about five pairs, eight inches long and less, very shortly petioluled, from oblong to oblanceolate, contracted into a long acuminate point, quite smooth and glabrous; nerves eight to ten pairs. *Heads* of flowers eight to ten inches in diameter, sessile on the trunk towards its base. *Outer bracts* two to three inches broad, rounded, silky externally; inner bracts narrowly spathulate, pubescent, longer than the calyces; bracteoles connate in a two-lobed funnel-shaped tube. *Calyx* one inch long, scarlet; lobes five, lanceolate, free or variously connate. *Petals* twice as long as the calyx, claws very slender, as long as the oblong scarlet blade, dorsal two-fid, the others rounded at the top. *Stamens* ten to twelve, two and a half inches long, scarlet. *Ovary* stipitate, very narrowly fusiform, tomentose.—*J. D. H.*

Fig. 1, Flower with bracteoles; 2, inner bract; 3, calyx; 4, standard; 5, staminal insertion; 6 and 7, anthers; 8, pistil:—*all enlarged.*

Tab. 7034.

OLEARIA insignis.

Native of New Zealand.

Nat. Ord. Compositæ.—Tribe Asteroideæ.

Genus Olearia, *Mœnch.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 276.)

Olearia *insignis*; frutex robustus, ramulis crassis petiolis foliis subtus pedunculisque dense niveo- v. rufo-tomentosis, foliis petiolatis crasse coriaceis oblongis obovatisve obtusis basi cuneatis v. subcordatis supra demum glaberrimis nitidis, pedunculis elongatis crassis monocephalis, involucri subglobosi tomentosi bracteis numerosissimis dense imbricatis subulato-lanceolatis exterioribus obtusis, intimis apicibus acerosis recurvis, floribus radii numerosis, ligulis 2–3-seriatis 3-dentatis, pappi setis rufis æquilongis scabridis apicibus subclavellatis, acheniis gracilibus dense sericeis.

O. insignis, *Hook. f. Fl. Nov. Zel.* vol. ii. p. 331; *Handb. of New Zeald. Flora* p. 125; *The Garden*, vol. xxxiv. p. 534, t. 678.

The genus *Olearia*, including *Eurybia*, represents, together with the scarcely distinguishable *Celmisia*, in Australia and New Zealand, the *Asters* of the north temperate regions and the Felicias of South Africa; and except by the terete achenes of *Olearia* and its shrubby or even arboreous habit, it is difficult to distinguish it botanically from *Aster*. Of all the many species of *Olearia*, however, none departs so widely from *Aster* as does the one here figured, which in its great ovoid involucre with the bracts in very many series, and its uniseriate pappus of perfectly equal hairs, rather clubbed at the tip, departs a good deal from the typical Olearias. It belongs to the group *Eriotriche* of the genus, in which the hairs are neither stellate nor fixed by the middle, but from a matted mass of wool.

O. insignis is a native of rocky river banks in the north part of the Middle Island, as in the province of Nelson, where it was discovered by Captain D. Rough about 1850. It has also been gathered on the banks of the Warrau river in the north-east part of the same island, occurring from the sea-level to 5000 feet elevation. The specimen figured was presented by that most excellent horticulturist and

valued correspondent of Kew, Herr Max Leichtlin of Baden Baden, in July of last year.

Descr. A low tabular-headed, very robust bush. *Branchlets* as thick as the middle finger, as well as the petioles leaves beneath and midrib above, peduncles and involucres, densely clothed with white or pale red-brown felted hairs. *Leaves* four to six inches long, elliptic oblong or obovate, obtuse, quite entire, thickly coriaceous, at first woolly above, at length quite glabrous smooth and shining; base acute, obtuse or subcordate; petiole very stout, terete, half to one and a half inches long, nerves very obscure on both surfaces. *Peduncles* axillary or subterminal, one- very rarely more-flowered, four to six inches long, as thick as a goose-quill, usually with one or two small narrow leaves on the upper part. *Head* an inch in diameter, subglobose, narrowed upwards; bracts very many, small, appressed, imbricate in many series, lanceolate, outer obtuse, uppermost with needle-like recurved points. *Flowers of ray* very many, in two or more series, white; ray linear, half an inch long, three-toothed; disk flowers narrowly tubular, yellow, five-toothed. *Achenes* slender, silky, the uppermost hairs more rigid and lengthened like an outer pappus, but quite smooth; pappus of one row of rigid white or rufous scabrid bristles slightly thickened at the tips.—*J. D. H.*

Fig. 1, Flower of the ray; 2, do. of the disk; 3, hair of pappus; 4, anthers; 5, style-arms:—*all enlarged.*

Tab. 7035.

ROSA incarnata.

Native of France.

Nat. Ord. Rosaceæ.—Tribe Roseæ.

Genus Rosa, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 625.)

Rosa *incarnata*; ramulis inermibus strictis superne petiolisque glanduloso-pubescentibus, stipulis magnis ellipticis glandulosis, foliolis 3–5 subsessilibus ellipticis supra viridibus subtus pallidis glaucescentibus, nervis validis plus minusve marginibusque duplicato-serrulatis glandulosis, pedunculis solitariis paucisve calycibusque sericeo-glandulosis, calycis tubo ovoideo utrinque angustato, sepalis lanceolatis longe acuminatis tribus pinnatifidis, disco parvulo, stylis liberis hispidis, corolla majuscula læte rosea.

R. incarnata, *Mill. Gard. Dict. Ed.* 1, Rosa No. 28, *Ed.* 3, Rosa No. 19; *Boreau Fl. Centr. Fr. Ed.* 2, p. 218; *Crepin in Bull. Soc. Bot. Belg.* vol. xv. p. 244; *Deseglise in Men. Soc. Acad. Maine et Loire*, p. 72, *et extra*, p. 32; *Fourreau Cat. Pl. Cours de Rhone*, p. 73.

It seems incredible that a plant growing wild in several parts of France, and which was recognized in English gardens two hundred and forty-eight years ago, and named and described in a standard work a hundred and seventeen years ago, should have, as it were, passed entirely out of the knowledge of horticulturists and botanists till the latter half of the present century. Yet such is the history of the *Rosa incarnata*, of Miller, enumerated under this name in the first edition of that author's Gardener's Dictionary, published in 1731, and described in the third edition (1771) of the same work. Nor is this its earliest recognition, for Miller in his first edition (1737) cites Parkinson's Herbal published in 1640, where (p. 1019) allusion is made to "the Trachynia, our pale red rose which Lugdunensis saith the French call *Rosa incarnata*, but Camerarius in horto saith it is a purple rose of a deeper or blackish rose-red colour with a pale violet colour mixed therewith, &c." In Parkinson's Herbal (1656) I find "2. Rosa incarnata, the Carnation Rose," to which is added "Rosa Belgica sive vitrea." On the other hand, Miller in his first edition cites Rosa Belgica sive vitrea "as another plant, and in his third edition he describes it as having a prickly stalk."

Parkinson describes *R. incarnata* as "very thick and double, very variable in the flower, some paler as if blasted, which cometh not casually but naturally to this Rose." The best flowers he says are "of a bright Murrey colour, near unto the velvet Rose, but nothing so dark in colour."

Miller calls it the Blush Rose (a name now usurped by *R. alba*), and adds that it flowers with the York and Lancaster roses, after the Damask, but before the Provences.

I can find no notice of the *Rosa incarnata* of Miller in any subsequent systematic botanical or horticultural work till 1857, when Boreau resuscitated it in the second edition of his Flore du Centre de la France, since which it has been recognized by all authors on the genus. There is indeed a variety of *alba*, Linn., called *incarnata*, established by Persoon, and taken up by De Candolle in the Prodromus (vol. ii. p. 622), where it is identified with the "Rose cuisse de Nymphe" of French gardeners; but *R. alba* has very different foliage from *incarnata*, and can never have been confounded with it. This, however, accounts for Steudel referring Miller's *incarnata* doubtfully to *R. alba*.

Rosa incarnata is one of the *Gallicanæ* group of Crepin, the latest and most learned writer on the genus, and is nearest to *R. gallica*, of which some botanists may be supposed to regard it as a variety. This may account in part for its being overlooked as a species, but not for the omission of the name in all descriptive works. Crepin diagnoses it by the unarmed petioles, elliptic-ovate leaflets pale and pubescent beneath with glandular doubly serrate margins, and the ovoid glandular calyx-tubes. It is a native of various widely separated districts in France, and is also found near Geneva. Lastly, Mr. Baker has referred me to the figure of the rose "Baroness Rothschild," figured in Paul's "Rose Garden," Ed. 9, p. 262, a hybrid perpetual, as perhaps nearly related to *R. incarnata*.

The specimen figured was kindly communicated by the Rev. Canon Ellacombe, whose collection of species of *Rosa* is famous, and has contributed largely to that of Kew.—*J. D. H.*

Fig. 1, Fruit of the natural size; 2, achene, *enlarged*.

Tab. 7036.

STREPTOCARPUS parviflora.

Native of the Cape of Good Hope.

Nat. Ord. Cyrtandraceæ.—Tribe Cyrtandreæ.

Genus Streptocarpus, *Lindl.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1023.)

Streptocarpus *parviflora*; laxe lanuginosa, foliis paucis terræ appressis subsessilibus patulis ovatis obtusis crenatis bullatis, scapis gracilibus plurifloris, bracteis minutis, calycis segmentis minoribus erectis, corollæ tubo lente curvo purpureo glanduloso-piloso, lobis rotundatis albis.

S. parviflora, *E. Meyer Zwei Pfl. Docum.* p. 152 (*nomen tantum*) (*non Bot. Mag.* t. 6636); *C. B. Clarke, Monogr. Cyrtand.* 152.

At Tab. 6636 of this work a plant is figured under the name of *Streptocarpus parviflora*, which, though evidently most closely allied to that here figured, has quite lately been regarded as a different species. This latter is, according to Mr. Clarke, the most recent monographer of the genus, probably *S. lutea* of Clarke, of which that author says "*S. parvifloræ* forsan varietas." Of *S. parviflora* there is no authentic description, nor are there specimens in the Herbarium at Kew so named by its author, but now that both the reputed *S. parviflora* of E. Meyer, and the plant figured for it at t. 6636 are known in cultivation, the diagnosis of the two is easy; the true *S. parviflora* is densely shaggy all over except the corolla, the leaves are appressed to the ground, much broader, ovate and spreading, the flowers rather larger, and the corolla lobes are orbicular, the corolla-tube is also narrower in proportion to the size of the flower. In all other respects the species are very similar. The only native specimens in the Kew Herbarium of the true *parviflora* are one very poor one collected by Harvey at Uitenhage and labelled by him *S. Rhexii* β., and very fine ones from an altitude of 3900 feet on the Graaf Reinet Mountains, collected by Mr. Bolus. According to Mr. Clarke it has

a very wide range indeed in South Africa, from the Cape district to Grahamstown and Natal.

The subject of the present plate was raised from seed brought by Mr. Watson, sub-curator of the Royal Gardens, from the immediate vicinity of Grahamstown in 1887.

Descr. Whole plant except the corolla shaggy with soft hairs. *Leaves* several from the root, four to six inches long, spreading, sessile or subsessile, ovate, obtuse, crenate, bullate, dark green above, nearly white beneath. *Scapes* several, six to ten inches high, reddish; flowers subcymosely racemed; pedicels slender and as well as the calyx, corolla-tube and ovary glandular-pubescent; bracts small, subulate. *Calyx* one-sixth of an inch long; segments linear, erect. *Corolla-tube* two-thirds of an inch long, slightly recurved, purplish without and within; limb as broad, flat, lobes orbicular, white, slightly unequal.—*J. D. H.*

Fig. 1, Calyx and ovary; 2, corolla laid open; 3 and 4, stamens:—*all enlarged.*

Tab. 7037.

MACODES javanica.

Native of Java.

Nat. Ord. Orchideæ.—Tribe Neottieæ.

Genus Macodes, *Blume*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 602.)

Macodes *javanica*; foliis parvis petiolatis elliptico-ovatis acutis, supra saturate viridibus lineolis albis pulcherrime transverse striolatis, subtus pallidis carneo-marmoratis, scapo stricto pauci-vaginato, spica multiflora floribusque glanduloso-pubescentibus, bracteis ovato-lanceolatis carneis ovarium æquantibus, sepalis ovato-rotundatis obtusis, petalis lineari-oblongis falcatis obtusis, labello supero parvo basi late ventricoso intus prope margines 2-calloso, lobis lateralibus parvis, terminali angusto spathulato plano, columna brevi 2-alata, rostello elongato, clinandrio cyathiformi.

Argyrorchis javanica, *Blume Orchid. Archip. Ind.* p. 120, t. 31 and 56 E (*forma abnormis*).

I have been much perplexed as to the identification of the subject of this plate, which appears to me to be a true *Macodes*, differing from *M. Petola*, Lindley, in its robust habit, larger thicker leaves, with green longitudinal nerves, though crossed like *M. Petola* with white ones. It bears the name at Kew of *Argyrorchis javanica*, Blume, and turning to Blume's figure of that plant (Orchid. Ind.), it closely resembles it in everything but the shape of the lip: in the accompanying description, Blume describes the petals as cohering with the dorsal sepal, and this I find to be the case, though they are very easily removable. It is less easy to account for his description of the lip as narrow, erect, undivided and altogether like the petals. Such a lip is an anomaly in the whole tribe of Orchids to which *Argyrorchis* belongs, and may be put down to a monstrous (or Peloria) condition, in which case *Argyrorchis* would be referable to *Macodes*, as is indeed suggested by Bentham in a note under the genus *Selenipedium* (Gen. Pl. vol. iii. p. 335).

Bentham in the Genera Plantarum has regarded *Macodes* as a monotypic genus, no doubt overlooking the three described by Reichenbach in his "Xenia," to which the present is an addition.

The beauty of *M. javanica* resides in the deep green

velvety leaves, the light-green longitudinal nerves of which are united by groups of transverse snow-white irregular streaks, much like those of *Dichorisandra mosaica*, but more delicate. It is a native of Java, and flowered in the Royal Gardens in May of last year, having been sent by the Director of the Buitenzorg Gardens.

Descr. An erect rather succulent glandular pubescent herb, twelve to eighteen inches high; roots fibrous, fleshy. *Stem* below the leaves four to six inches high, as thick as a swan's quill, pale reddish clothed with short sheaths that are sometimes terminated by a reduced leaf-blade. *Leaves* three to five, approximate, elliptic, acute, narrowed into a short stout petiole with a short amplexicaul sheath, upper surface very dark velvety green with green parallel nerves and groups of delicate white undulating cross striolæ, under surface and petiole pale flesh-coloured with white nerves and irregular cross bars. *Scape* strict with one or two flesh-coloured sheaths. *Spike* four inches long, lax-flowered; bracts lanceolate, flesh-coloured, as long as the ovaries which are green and one-third of an inch long. *Perianth* half an inch in diameter; lateral sepals spreading, broadly ovate, obtuse, bright orange-red with white midrib and tips; petals, lanceolate, falcate, appressed one on each side of the dorsal sepal which is rather the largest of the three. *Lip* superior, small, sessile in the centre of the flower, yellowish white, consisting of a pitcher-shaped sac with rounded ears between which is a small deflexed spathulate flat midlobe; there are two globose glands just within the margin of the pitcher, one on each side. *Column* short, stout, with a long rostellum, membranous wings, and a cup-shaped clinandrium.—*J. D. H.*

Fig. 1, Flower; 2, petal; 3, lip; 4, side view of the same, showing one of the glands; 5, top of ovary and column; 6, column seen in front:—*all enlarged*

TAB. 7038.

STRELITZIA NICOLAI.

Native of South Africa

Nat. Ord. SCITAMINEÆ.—Tribe MUSEÆ.

Genus STRELITZIA, *Ait.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 656.)

STRELITZIA *Nicolai;* caudice elato, foliis erectis lamina petiolo æquilonga elliptico-oblonga obtusa basi cuneata rotundata v. subcordata, scapo brevissimo robusto, bracteis 5–6 pedalibus cymbiformibus acuminatis griseo-brumeis, pedicellis crassis roseis, sepalis subæqualibus concavis lanceolatis acuminatis, petalo exteriore brevissimo ovato-rotundato mucronato, lateralibus in laminam sagittatam cæruleam connatis.

S. Nicolai, *Regel & Körner in Gartenfl.* 1858, p. 265, t. 235; *Körner in Mittheil. der Russ. Gartenb.* vol. i. p. 54, *cum Ic.*; *Jovet in Rev. Hortic.* 1888, p. 117; *Fl. de Serres* xiii. 1356; *Gard. Chron.* 1888, pt. ii. p. 695.

The date of introduction of this fine plant, which, seeing the stature it has attained, must have been cultivated in European Botanical Gardens for a great many years, is unknown; nor has its native locality in South Africa been ascertained. In habit and foliage it so closely resembles the familiar *S. Augusta* (see Bot. Mag. t. 4167), that before it flowered it was naturally supposed to be that plant. *S. Augusta* was introduced in 1791 by Francis Masson, but there is no record of where he procured the plant. Thunberg, who discovered *S. Augusta* during his travels in S. Africa (1772—1775), gives as its habitat, in his Prodromus Flora Capensis, the Pisang River in Anteniqua Land. These names I do not find in any map or gazeteer, but I presume the latter to be the Oliphant River from the following facts. Burchell, the famous botanical traveller in South Africa, never met with *S. Augusta* except in the Cape Town Botanical Gardens, but he says that its Dutch name is "Welde Pisang," the wild Plantain, Pisang being the Malay name of the Plantain, which this *Strelitzia* resembles in foliage, and Thunberg's Anteniqua may be assumed to be the region of the Onteniqua Mountains, through which the Oliphant River flows. This identification of the river is confirmed by a reference to the valuable

work of another South African botanical traveller, the late James Backhouse, the founder of the famous Nurseries at York. In his instructive and interesting "Visit to Mauritius and South Africa," which he undertook for philanthropic purposes, Backhouse only once mentions seeing *Strelitzia Augusta*, and that was at Plattenberg Bay, a bay on the coast some 300 miles east of Cape Town, and where the Oliphant River falls into the sea. It would be as interesting to know the geographical area occupied by *S. Augusta* as to discover that of *S. Nicolai*.

S. Nicolai differs from *S. Augusta* in its larger bracts and flowers, and in the hastate combined petals, which are further of a pale blue colour. (In *S. Augusta* these are round at the base and white.) It seems to have been first noticed as a distinct species in the Imperial Gardens of St. Petersburgh, where it flowered in 1858, and was named by Regel and Körne after the Emperor Nicholas. It is alluded to in a note in the *Gardener's Chronicle* under the name of *S. Augusta*, which note brought a statement from M. Henriquez of the Coimbra Botanical Garden (Portugal), to the effect that the same plant flowers annually there. It must be left to the botanists of South Africa to discover its native country, and whether the few characters that distinguish it from *S. Augusta* are constant or not. The plant from which the accompanying figure was taken had a stem twenty-five feet high, and flowered in the winter months. In European Gardens it is treated as a green-house plant, in respect of which I may state that *S. Augusta* which was figured in this work from a specimen that flowered in the Palm House, also throve and flowered regularly for many years in the Temperate House.—*J. D. H.*

Fig. 1, Flowers with the sepals narrowed, showing the two combined and small free petal; 2, apex of combined petals stamens and style; both of *the natural size.*

el. J. N. Fitch lith.

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TAB. 7039.

STYRAX OBASSIA.

Native of Japan and Corea.

Nat. Ord. STYRACEÆ.

Genus STYRAX, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 669.)

STYRAX *Obassia*; frutex v. arbuscula, ramulis foliisque subtus tomentellis, foliis breviter petiolatis aliis oblongo-rotundatis obtusis integerrimis v. obscure denticulatis aliis multo majoribus orbicularibus supra medium grosse sinuato-dentatis, racemis terminalibus multifloris simplicibus, floribus pendulis, calycis tubo subcampanulato inæqualiter 5-dentato, petalis oblongis obtusis imbricatis, staminibus glabris, antheris filamento æquilongis, capsula obovoidea crustacea tomentella.

S. Obassia, *Sieb. & Zucc. Fl. Japon.* vol. i. p. 93, t. 46, *A. DC. Prodr.* vol. viii. p 260; *Franch. & Savat. Enum. Pl. Jap.* vol. i. p. 309; *Miquel Prolus. Fl. Jap.* p. 265; *Gard. Chron.* 1888, ii. p. 131, f. 12; *Journ. of Horticulture*, 1888, p. 513, f. 73.

One of the most attractive of the many hardy shrubs introduced within late years from Japan, where it is a native of the southern mountains of Kiusiu and Sikok. It has also been detected in Corea by Wilford, when collecting for the Royal Gardens of Kew in 1859. Siebold, who discovered it in Japan, attributes to it no other property but its scent of Hyacinths, he gives it the native name of "Obassia," which is rendered "Owo batsya" by Franchet and Savatier in their enumeration of Japan plants.

The difference in size and form of the leaves is remarkable, the larger attaining ten inches in diameter, and occurring sometimes at the apex of the branches, at others alternately with the smaller. The petiole presents the remarkable character of sheathing the leaf-buds, as in *Liriodendron*, *Platanus* and other widely separated genera of plants.

The specimen figured is one exhibited by Messrs. Veitch at a fortnightly meeting of the Royal Horticultural Society in June, 1888, and kindly communicated for figuring in this work. The racemes which are represented in the *Gardener's Chronicle* as erect with suberect flowers is in

our specimen inclined with pendulous secund flowers, as in the description and plate of Siebold and Zuccarini.

A shrub or small tree; branches slender and leaves beneath covered with stellate down. *Leaves* of two forms, the larger orbicular or orbicular-oblong, six to ten inches in diameter, coarsely sinuate-toothed above the middle, denticulate towards the base, petiole one inch; the smaller more shortly petioled, two to four inches long, broadly oblong, green above, nearly white beneath, with often red-brown hairs on the nerves. *Racemes* terminal, four to seven inches long, very shortly peduncled, laxly many-flowered; bracts small, caducous; pedicels half an inch long. *Flowers* snow-white, secund, drooping, about one and a half inches broad. *Calyx* subcampanulate, green, terete, minutely rather unequally five-toothed, stellately downy. *Petals* oblong, obtuse, concave, strongly imbricate. *Stamen* united in a tube at the base with the petals, glabrous; anthers as long as the filaments or shorter. *Ovary* partly superior, tip hemispheric, puberulous; style filiform; stigma simple. *Capsule* one inch long, ovoid, crustaceous, bursting from the base upwards, girt below by the enlarged calyx. *Seed* ellipsoid.—*J. D. H.*

Fig. 1, Calyx and style; 2, flower laid open; 3 and 4, stamens; 5, ovary with part of the calyx removed; 6, fruit:—*all but f.* 6 *enlarged.*

Tab. 7040.

IRIS Meda.

Native of Persia.

Nat. Ord. Irideæ.—Tribe Moræeæ.

Genus Iris, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 686.)

Iris (*Pogoniris*) *Meda;* rhizomate breviter repente, foliis basalibus brevibus linearibus glaucescentibus, caule monocephalo foliis subæquilongo, spathæ valvis binis contiguis lanceolatis herbaceis, pedicello subnullo, perianthii tubo ovario æquilongo limbi segmentis luteo-viridulis ubique venis brunneis decoratis, exterioribus oblongo-cuneatis supra medium patulis barbâ centrali densa lutea brunneo marginata decoratis, interioribus erectis oblongis unguiculatis, styli ramis latis cristis parvis deltoideis.

Iris Meda, *Stapf in Bot. Ergeb. Polak Expedit. Pers.* p. 20.

This is a well-marked new Iris, which was discovered in Persia in the year 1882 by the Austrian traveller, Polak, and introduced by him to Vienna. Its nearest alliance is with the South European *Iris Chamæiris* of Bertoloni, of which the flower in the type is yellow, and of which there are two fine violet varieties, one of which, *I. olbiensis*, Henon, was figured, Bot. Mag. t. 6110. Probably the present species will be also found to be variable in colour, as in the original description violet and lilac are mentioned. It is said to flower in its native home at the middle of May, and this was also the case with the plant in England. Our drawing was made from a plant grown at Shelford by Professor Michael Foster.

Descr. *Rhizome* short-creeping, weaker than that of *I. pumila*. Basal *leaves* about four, linear, glaucescent, not more than three or four inches long at the flowering time. *Stem* one-headed, about as long as the leaves. *Spathe* one-flowered; valves contiguous, lanceolate, herbaceous, two or two and a half inches long; pedicels scarcely any. *Ovary* cylindrical, under an inch long; perianth-tube green, cylindrical, as long as the ovary; segments of the limb (in our plant) greenish-yellow, copiously veined from top to bottom with brown; outer segments oblong-cuneate,

reflexing from half-way down, brown in the centre, with a dense yellow beard; inner segments as long as the outer, rather narrower, oblong-unguiculate, erect. *Style*-branches broad and convex on the back; crests small, deltoid, crenate. *Anther* linear, longer than the filament.—*J. G. Baker.*

Fig. 1, Stamen; fig. 2, style-branch, with its crests:—*both enlarged.*

Tab. 7041.

OPUNTIA Rafinesquii.

Native of the United States of America.

Nat. Ord. Cacteæ.

Genus Opuntia, *Mill.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 851.)

Opuntia (ellipticæ) *Rafinesquii*; diffusa, radice fibrosa, articulis obovatis v. suborbiculatis, foliis subulatis patulis, papillis subremotis albido v. griseo-villosis setas graciles gerentibus plerisque inermibus, aculeis paucis sæpissime marginalibus validis rectis albis uno alterave graciliore deflexo adjecto, alabastris conicis acutis, ovario clavato pulvillis 20–25 griseo-villosis rufo-setosis instructo, sepalis sub 13 oblanceolatis acuminatis interioribus petaloideo-marginatis cuspidatis, petalis 10–13 obovatis erosis denticulatis sulphureis, stigmatibus 7–8 erectis pallide flavis, bacca obovoidea subnuda pulposa purpurascente, umbilico infundibulari, seminibus compressis.

O. Rafinesquii, *Engelm. in Pacific Rail. Rep.* vol. iv. p. 41, t. 10, f. 3–5, t. 22, f. 7, 8; *Synops. Cact.* p. 295; *Bot. Works*, p. 143, 164; *Torry Bot. Bull.* vol. ii. t. 34; *Lemaire Ill. Hort.* 15, *Misc.* 49 *cum Ic.*; *Haage & Schmidt in Rev. Hortic.* 1868, p. 90, f. 10, 11; *Gray Man. Bot. N. U. S.* p. 185; *Porter Flor. Colorad.* p. 49; *Först. Handb. Cact.* p. 923, fig. 126; *Hemsley in Garden.* vol. xi. p. 274.

O. macrantha & O. cæspitosa, *Raf. in Bull. Bot. Genev.* 1830, p. 216; *Fl. Med.* vol. ii. p. 247; *Pfeiff. Enum. Cact.* p. 146.

O. vulgaris, *Torr. & Gr. Fl. N. Am.* vol. i. p. 535 *in part*; *Emerson Trees of Massachuss.* p. 424.

O. vulgaris, var.? Rafinesquii, *Gray Man. Bot. Ed.* 2, p. 136.

Cactus Opuntia, *Torrey Fl. N. States*, p. 466 *in part.*

The fact that *Cacti* are sufficiently hardy to bear English winters has long been known, and is set forth in this work when figuring *Opuntia vulgaris* (Cactus Opuntia, t. 2393), but it is comparatively of late that their cultivation in the open air with protection from damp only in the winter months has been successfully pursued to any extent; and when the number of large and brilliantly flowered species that inhabit countries to which such treatment in England is well adapted is considered, a very great development of this branch of Horticulture is to be anticipated. *O. Rafinesquii* has a wide range in North America, from Wisconsin in the north and Kentucky in the east, and probably to Louisiana and Texas in the south and west. For a full

account of the species and its numerous forms, I must refer to Engelmann's works enumerated above, and from which the characters of this species are derived. Dr. Engelmann enumerates no fewer than fifty Opuntias, natives of the United States of America, of which *Rafinesquii* is the most widely distributed and, as might be expected, the most variable. It comprises five local forms, of which three are western and two eastern. The latter are var. *microsperma*, which has usually been confounded with *O. vulgaris*, and var. *grandiflora*, a native of Texas. The plant here figured is no doubt the first of these, distinguished by its large flowers, which are often red in the centre, and few spines (which are sometimes entirely absent).

The plant with which *O. Rafinesquii* was so long confounded is the *O. vulgaris*, the only American species north of Mexico with which Linnæus was acquainted; it is confined to the west of North America, east of the Alleghany Mountains, where it extends from Massachusetts to Florida, and is the eastern representative of *Rafinesquii*, which is only found to the westward of that range. Engelmann distinguishes *vulgaris* from the latter plant by its smaller size, paler colour, small pulvilia, usual absence of spines, smaller flowers with less numerous parts, and especially by the short thick and more or less appressed leaves.

O. Rafinesquii has been cultivated for many years at Kew, flowering annually all through the summer. It was no doubt one of the many contributions of Cacti received from the late Henry Shaw of St. Louis, the founder of the Shaw Botanical Gardens and School of Botany in that city, and to whose munificence botanists owe the publication of the collected works of G. Engelmann.—*J. D. H.*

Fig. 1 and 2, Stamens; 3, style and stigmas; 4 and 5, seeds:—*all enlarged.*

TAB. 7042.

DENDROBIUM GRACILICAULE.

Native of Eastern Australia.

Nat. Ord. ORCHIDEÆ.—Tribe EPIDENDREÆ.

Genus DENDROBIUM, *Sw.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii.)

DENDROBIUM (Stachyobium) *gracilicaule*: caulibus fastigiatis 3–6 pollicaribus teretibus simplicibus plurivaginatis basi vix tumidis apice 3–5-foliatis, foliis oblongo-lanceolatis apice 2-fidis, scapis caulibus aphyllis subterminalibus foliis brevioribus gracilibus nutantibus laxifloris, racemis 8–10 floris, bracteis minutis, floribus flavis, sepalis purpureo-maculatis dorsali lineari-oblongo obtuso, lateralibus oblongo-lanceolatis falcatis obtuso, mento rotundato, petalis lineari-oblongis obtusis falcatis labello sepalis breviore, lobis lateralibus rotundatis erectis, terminali reniformi nudo disco inter lobos laterales 3-lamellato.

D. gracilicaule, *F. Muell. Fragm. Phyt. Austral.* vol. i. p. 179; *Benth. Fl. Austral.* vol. vi. p. 281.

D. brisbanense, *Reichb. f. in Walp. Ann.* vi. 299.

D. elongatum, *Cunn. in Bot. Reg.* xxv. (1839), *Misc.* 33; *Lindl. l. c.* xxvii. (1841 p. 21 (*non Lindl. Gen. & Sp. Orchid.*).

D. gracilicaule so closely resembles *D. Kingianum*, also a Queensland plant, that by Herbarium specimens it is not easy to distinguish them; when growing, however, they look widely different, as may be seen by comparing Plate 4527 of this work with that here given. In *D. Kingianum* the stems form elongated cones, the sheaths of which are deciduous and the internodes are much longer, the leaves are shorter, of a darker green, the flowers appear along with the leaves, though this is probably an inconstant character, the racemes are longer than the leaves, the flowers are larger, longer, and pedicelled, the sepals and petals purple, and the mentum longer and incurved. On the other hand, Mr. Watson, the Assistant-Curator of Kew, informs me that *D. Kingianum* is a very variable species, wherefore the above differential character must be received with caution. Though placed by Lindley and Bentham in the Flora Australiensis in the section *Dendrocoryne*, *D. elongatum* cannot be regarded as related to the Indian

plants upon which that section was founded. In the Genera Plantarum it is rightly referred to *Stachyobium*.

D. gracilicaule is a native of Moreton Bay in Queensland, of the Macleay and Clarence rivers in New South Wales, and of Lord Howe's Island. It is an inconspicuous species, and probably often overlooked. The specimen here figured was received in 1883 from Mr. J. F. Roberts, nurseryman of Kew, near Melbourne, Australia, and the drawing was made in March of last year.

Descr. *Stems* tufted, four to eight inches high, as thick as a goosequill, cylindric, with a slightly thickened base, clothed with membranous sheaths. *Leaves* three to five at the top of the stem, sessile, four to five inches long, oblong-lanceolate, tip bifid, yellow green, flaccid. *Scape* slender, from close to the summit of the stem, flowering after the fall of the leaf in the cultivated plant, but not constantly in the wild state. *Raceme* six- to ten-flowered, nodding; bracts minute; flowers very shortly pedicelled, pedicel with the ovary half an inch long. *Flowers* pale yellow. *Sepals* spotted purple, dorsal oblong, obtuse, lateral falcately oblong-lanceolate, obtuse. *Mentum* rounded. *Petals* linear-oblong, obtuse, unspotted. *Lip* shorter than the sepals, greenish-yellow; lateral lobes rounded, erect, midlobe reniform, smooth; disk between the lateral lobes with three longitudinal plates.—*J. D. H.*

Fig. 1, Column and lip; 2, column; 3, anther; 4, pollinia:—*all enlarged.*

Tab. 7043.

EREMOSTACHYS laciniata.

Native of Western Asia.

Nat. Ord. Labiatæ.—Tribe Stachydeæ.

Genus Eremostachys, *Bunge*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1215.)

Eremostachys (Phlomoides) *laciniata*; caule robusto elato in spicam elongatam densissime albo-lanatam desinente, foliis radicalibus amplissimis petiolatis bipinnatisectis glabriusculis, segmentis oblongo- v. lineari-lanceolatis inciso-serratis, caulinis sessilibus diminutis, floralibus ovato-oblongis flores subæquantibus, verticillastris numerosis multifloris subremotis, bracteis linear-lanceolatis, floribus sessilibus magnis, calyce tubuloso-campanulato dense floccoso, ore truncato, dentibus rectis brevissimis spinescentibus, corolla ochroleuca v. luride purpurea, galea villosa.

E. laciniata, *Bunge in Ledeb. Fl. Alt.* vol. ii. p. 416 (*in Adnot.*); *Benth. in DC. Prodr.* vol. xii. p. 547; *Boiss. Fl. Orient.* vol. iv. p. 793; *C. A. Meyer Ind. Pl. Caucas.* p. 96; *Lindl. in Bot. Reg.* 1845, p. 52; *Regel Gartenfl.* vol. viii. p. 33, t. 249; *Lindl. & Paxt. Fl. Gard.* vol. ii. p. 83, fig. 176.

P. macrocheila, *Jaub. & Spach. Ill. Pl. Orient.* vol. v. p. 13.

E. iberica, *Visiani in Ann. Sc. Nat. Ser.* 3, vol. vii. p. 380.

Phlomis laciniata, *Linn. Sp. Pl.* p. 819; *Ait. Hort. Kew. Ed.* 2, vol. iii. p. 408; *Sweet. Brit. Fl. Gard.* vol. i. t. 84.

Moluccella lanigera, *Poir. Encycl. Suppl.* vol. iii. p. 722.

Though never hitherto figured in the Botanical Magazine, this noble hardy perennial has been long cultivated in England, having been introduced by Philip Miller in 1731 from the Levant, and described in the first edition of Miller's Gardener's Dictionary as "The Eastern Jerusalem Sage with jagged leaves." It is the easternmost representative of a genus that extends into Siberia, Affghanistan, and Central Asia, but it has itself a narrow distributional area, being confined to the southern Caucasian region on the north, reappearing in the Levant, where it occurs throughout the length of Syria and Palestine, and extends a little way westward into the ancient Cilicia (the modern Adania).

Our plant flowered in the Royal Gardens in June of last year, and presented a very striking appearance.

Descr. A stately herbaceous perennial. *Stem* one to

three feet high including the spike, robust, leafy, clothed with flocculent white wool, as thick as the thumb at the base. *Radical leaves* two feet long and a foot broad, ovate in outline, glabrous, bipinnatipartite; segments oblong- or linear-lanceolate, inciso-serrate, green above, much paler beneath; cauline leaves smaller, sessile and less compound; floral ovate, inciso-pinnatifid, as long as the flowers. *Whorls* many, rather distant, many-flowered; bracts lanceolate. *Calyx* three-fourths of an inch long, tubular-campanulate, terete, densely flocculent; mouth truncate with five minute bristles or teeth. *Corolla* nearly two inches long, pale dull-red purple, with a bright-red mid-lobe of the lower lip, villous, especially the galeate upper lip; tube glabrous; side-lobes of lower lip broad, disk between them dull yellow. *Stamens* glabrous. *Ovary* hispid.—*J. D. H.*

Fig. 1, Section of calyx, showing the ovary; 2, corolla with the lower lip removed; 3, stamens in position; 4 and 5, stamens :—*all but fig.* 2 *enlarged.*

M.S.del, E.Bates lith

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Tab. 7044.

DELPHINIUM Zalil.

Native of Khorasan.

Nat. Ord. Ranunculaceæ.—Tribe Helleboreæ.

Genus Delphinium, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 9.)

Delphinium (Delphinastrum) *Zalil*; perenne, erectum, puberulum, caule subsimplici, foliis tri- triter-natipartitis lacinia media interdum pinnatipartita superioribus simplicioribus supremis bracteisve simplicibus, segmentis linearibus acuminatis rigidis, marginibus recurvis, petiolo basi non dilatato, racemis laxifloris, floribus primulinis, pedicellis pubescentibus, sepalis late ovatis obtusis, calcare recto sepalis æquilongo, apice attenuato, petalis angustis 2-fidis intus barbatulis, filamentis puberulis basi dilatatis, carpellis 3 glabris, stylo recto, folliculis 3 oblongis 5-costatis reticulatisque glabris, seminibus subquadratis transverse fimbriato-lamellatis.

D. Zalil, *Aitchison & Hemsley in Trans. Linn. Soc. Ser.* 2, vol. iii. p. 30, t. 3; *Vien Illust. Gartenzeit*, vol. xiii. (1888) p. 12, *cum Ic. xylog.*

As a plant of economic value, this is one of the most interesting discoveries of the Affghan Delimitation Commission, and our knowledge of it is due to the fact that the Indian Government directed a competent botanist, Dr. Aitchison, F.R.S., to accompany that important geographical operation. In the work cited above, Dr. Aitchison (p. 31) thus describes the Persian Zalil: "This plant forms a great portion of the herbage of the rolling downs of the Badghis; in the vicinity of Gulran it was in great abundance, and when in blossom gave a wondrous golden hue to the pastures. In many localities in Khorasan above 3000 feet it is equally common. The flowers are collected largely for exportation, chiefly to Persia, for dyeing silk; they are also exported from Herat, through Affghanistan to Northern India, to be employed as a dye, as well as to be used in medicine." In another place (p. 20) Dr. Aitchison, speaking of the vegetation of Badghis, says, "For a short period the hillocks are tinted an exquisite blue by the flowers of *Gentiana Olivieri*, which is, as Boissier noted, a hot country Gentian. This is followed by *Delphinium Zalil*, a perennial, which throws

up a spike of bright yellow blossom, two feet in height. Its showy blossoms suddenly cover the downs, which they illuminate with their brilliant colouring, affording a sight never to be forgotten."

The fact of *D. Zalil* affording a dye-stuff is one of many evidences of our ignorance of the materials used in the industrial arts of the East. It is reasonable to suppose that the flowers have been an article of commerce for ages, and yet I am unable to find any allusion to the subject in books devoted to the Economic Botany of India or to its manufactures. It is to be hoped that this may meet the eye of some intelligent official in the British Indian service, who might ascertain to what purpose the imported Zalil is put.

D. Zalil does not accord well with any section of *Delphinastrum*, as these are defined by Boissier. Regel, who was consulted as to its affinity, and whose great knowledge of Oriental plants is unquestioned, pronounced it to be possibly *D. ochroleucum*, a Soongarian species, reduced by Boissier (vol. i. p. 89) to a form of the polymorphous *D. hybridum*, which has white, blue, and scarlet flowers; but that species belongs to the division with a dilated base of the petiole, with the lower petals equalling or exceeding the sepals, and with other discordant characters; yet I know no nearer affinity.

The specimen figured was raised from seed sent to Kew by Dr. Aitchison in September, 1886, and which flowered in July of last year.—*J. D. H.*

Fig. 1 and 2, Petals; 3, carpels:—*all enlarged.*

Tab. 7045.

IRIS Barnumæ.

Native of Armenia.

Nat. Ord. Irideæ.—Tribe Moræeæ.

Genus Iris, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 686.)

Iris *Barnumæ*; rhizomate brevi, foliis linearibus complicatis glaucescentibus semipedalibus, caule brevi monocephalo, spathæ valvis lanceolatis post anthesin herbaceis, perianthii tubo ovario æquilongo, limbo saturate purpureo segmentis exterioribus atro-purpureis obovato-cuneatis reflexis barbâ diffusa pilis luteis purpureo-capitatis præditis, segmentis interioribus orbiculari-unguiculatis erectis conniventibus exterioribus majoribus, antheris filamento longioribus, styli ramis latis dorso convexis cristis deltoideis, capsulis ellipsoideo-trigonis, seminibus magnis conspicue strophiolatis.

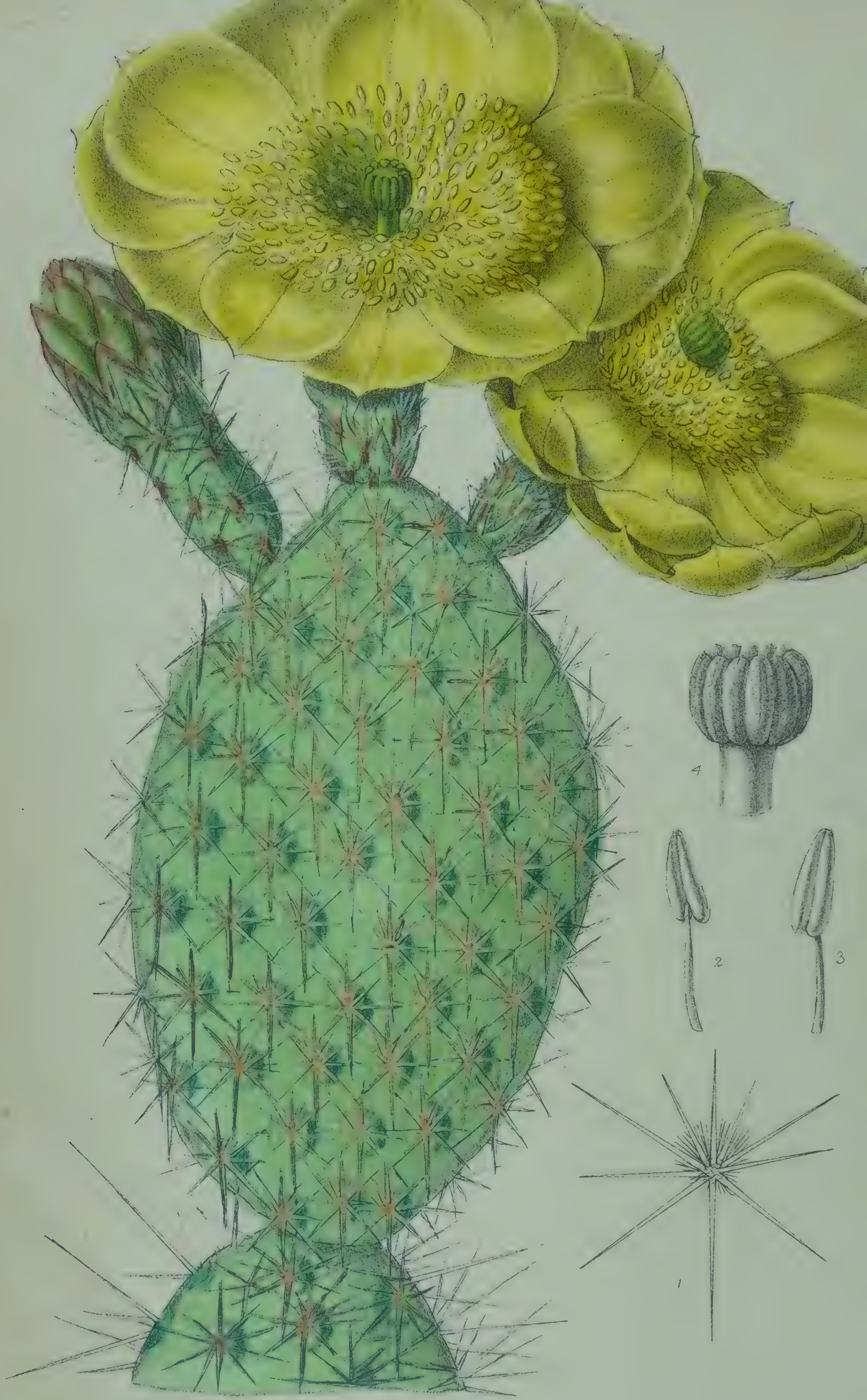
I. Barnumæ, *Foster & Baker in Gard. Chron.* 1888, vol. ii. p. 182.

During the last ten years our knowledge of Irises has been greatly enlarged, and instead of about a hundred species for the whole of the north temperate zone, we now know a hundred and forty or a hundred and fifty, most of which are in cultivation. A large proportion of the new discoveries have been made in different parts of Asia. The present plant is a very handsome and distinct novelty. It was sent to Professor Foster by Mrs. Barnum, of the American Mission at Kharput, from the hills two hours distant from Van in Armenia. It has a distinctly concentrated beard, as in the common German Irises, and the colour of the flower is dark purple, without veins of a distinctly different shade; but in other respects, in its mode of growth, habit, and leaves, it agrees with the section *Oncocyclus*, all the species of which inhabit the Oriental region. Our drawing was made from specimens sent by Professor Foster at the beginning of last June.

Descr. *Rhizome* like that of an *Oncocyclus*, shortly creeping with the new buds soon detaching themselves from the old stock. Produced *leaves* five or six to a tuft, linear, complicate, pale glaucous green, strongly ribbed, half a

foot long at the flowering time. *Stem* one to six inches long, one-headed, bearing a single reduced leaf. *Spathes* one-flowered; valves lanceolate, two or two and a half inches long, herbaceous till after the flower fades. *Ovary* cylindrical-trigonous, under an inch long, shortly pedicellate. *Perianth-tube* as long as the ovary; limb dark purple; outer segments obovate-cuneate, purplish-black, about two inches long by an inch broad, reflexing from half-way down, furnished down the claw with a beard of yellow hairs tipped with purple; inner segments orbicular-unguiculate, erect, connivent, larger and brighter-coloured than the outer. *Style-branches* above an inch long, very convex on the back; crests deltoid. *Capsule* ellipsoid-trigonous. *Seeds* large, with a conspicuous pale strophiole. *J. G. Baker.*

Fig. 1, Front view of anther; 2, back view of anther; 3, top of style-branch, with crests:—*all more or less enlarged.*



M. S. del L. Bates lith.

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Tab. 7046.

CALANDRINIA oppositifolia.

Native of Oregon and California.

Nat. Ord. Portulaceæ.

Genus Calandrinia, *H. B. & K.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 158.)

Calandrinia *oppositifolia*; perennis, radice fusiformi carnoso, foliis radicalibus confertis oblanceolatis obtusis, caulinis inferioribus oppositis v. subopposite, caulibus scapisve elongatis prostratis longe nudis, apicibus ascendentibus paucifloris, floribus amplis longe pedicellatis, bracteis parvis, sepalis orbicularibus dentatis eglandulosis, petalis 10 lineari-oblongis, stigmatibus 5, seminibus estrophiolatis.

C. oppositifolia, *S. Wats. in Proc. Amer. Acad.* vol. xx. p. 355; *A. Gray l. c.* vol. xxii. p. 276 (sub *C. Cotyledon*).

Of the genus *Calandrinia* (of which upwards of sixty species are known) several have been figured in this work, chiefly South American, some of which, as *C. grandiflora*, Lindl., t. 3369, and *C. speciosa*, Lindl., t. 3379, are large-flowered and very handsome plants. These, however, are warm country annuals with five petals, whereas *C. oppositifolia* belongs to a small section of the genus that inhabits mountain regions in North America, with perennial fleshy roots, and six to ten petals, and differs further in having smooth shining seeds.

C. oppositifolia is a native of the mountains of Oregon and North California, and closely resembles *C. Cotyledon*, another species of those regions, differing chiefly in habit. The delicacy of its white blossom is its great recommendation to the Horticulturist. The plants here figured were raised from seed sent from the Harvard Botanical Gardens, which flowered in the Royal Gardens in the summer of last year.

Descr. *Root* fusiform, fleshy, crown throwing out a tuft of leaves and prostrate terete fleshy flowering stems, which are six to ten inches long, few-flowered, about as thick as a crow-quill, greenish-white, and succulent. *Leaves* two to four inches long, the few on the flowering stems opposite

or subopposite, oblanceolate, obtuse, narrowed into short thick petiole, green and glistening above from the cellular surface, paler beneath. *Flowers* three to four on each flowering stem, very irregularly placed towards its ascending apex, two inches in diameter, pearly-white; pedicels very variable in length, one to three inches. *Calyx* of two rounded sepals, connate to the middle, the free part denticulate. *Petals* ten, linear-oblong or obovate, obtuse, somewhat recurved. *Stamens* not very numerous; filaments slender, connate in a ring at the base of the corolla; anthers small, linear-oblong. *Ovary* obovoid; style short, with five stigmatic erect branches. *Seeds* on a free basilar placenta, smooth, estrophiolate.—*J. D. H.*

Fig. 1, Calyx with ovary; 2, stamens; 3, dorsal view of an anther; 4, ovary; 5, young seeds on placenta; 6, young seed:—*all enlarged.*

Tab. 7047.

PASSIFLORA Hahnii.

Native of Mexico.

Nat. Ord. Passifloreæ.—Tribe Passifloreæ.

Genus Passiflora, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 810.)

Passiflora (Granadilla) *Hahnii*; glaberrima, ramulis gracillimis, foliis petiolatis peltatis late ovatis acutis 2-nerviis utrinque ad apices nervorum minute dentatis supra viridibus subtus pallide fusco-purpureis et reticulatim nervosis, margine ad basin glandulis rubris ornato, stipulis reniformibus denticulatis, floribus axillaribus solitariis pendulis longe gracile pedicellatis, bracteis 2 late ovato-cordatis apiculatis, sepalis petalisque subæquilongis ovato-oblongis apicibus rotundatis, corona exteriore e filamentis flexuosis apice clavellatis aurantiacis, interiore e membrana sulcata margine inflexo, ovario gynophoro brevi sessile.

P. Hahnii, *Masters in Mart. Fl. Bras. Passifl.* p. 535; *in Trans. Linn. Soc.* vol. xxxvii. p. 628; *in Journ. Hort. Soc.* No. iv. p. 144; *in Gard. Chron.* 1871, p. 73, and 1878, pt. ii. p. 304, fig. 55; Icon iterat in 1879, pt. ii. p. 505, f. 81; *T. Moore in Florist. & Pomolog.* 1883, p. 161, t. 597.

Disemma Hahnii, *Fournier in Rev. Hortic.* 1869, p. 430, *cum Ic.*

A very elegant Passion-flower, of which the exact native locality is unknown, though there is no reason to doubt the authority of the French Gardens, from which it was introduced into England, and which give it the wide country of Mexico. It was first described as a species of *Disemma* in 1869 by Fournier, from specimens that flowered in the Jardin de Plantes, and of which seeds were sent from Mexico by its collector, M. Hahn. *Disemma*, which had latterly been regarded as a section of *Passiflora*, has been abolished by Dr. Masters in his exhaustive work on the *Passifloreæ* (Contribution to the Natural History of the *Passifloraceæ*, Trans. Linn. Soc. xxvii. 593); and *P. Hahnii* is there relegated to a section of his sub-genus *Granadilla*, differing from the true Granadillas in the folded fringed edges of the membranous corona.

The specimen figured flowered in the Royal Gardens in the summer of last year.

Descr. A lofty climber, quite glabrous. *Branches* very slender, pendulous, terete. *Leaves* about three inches long by two and a half broad, petioled, peltate, membranous,

broadly ovate, acute, three-nerved, quite entire except a minute marginal tooth at the termination of each nerve; base rounded or retuse, with a series of minute marginal red glands; dull green above, beneath dull red-purple and reticulately veined, nerves very slender; petiole one to one and a half inches, slender, eglandular. *Stipules* three-quarters of an inch to one inch broad, sessile, reniform, denticulate, pale purplish and reticulate; bracts two, appressed to the flower, sessile, broadly ovate, apiculate, subcordate, half the length of the sepals, pale purplish and reticulate. *Tendrils* axillary, very slender. *Flowers* solitary, axillary, pendulous, long-pedicelled, three inches in diameter. *Sepals* ovate-oblong, tip rounded, concave, very pale green, with three green nerves on the back. *Petals* like the sepals, but whiter. *Outer corona* of several series of orange-yellow flexuous filaments three-quarters of an inch long, with clavate tips; inner corona a low sulcate crenate inflexed membrane with thickened margins. *Gynophore* short; ovary subglobose, sessile on a short gynophore, and styles green, glabrous.—*J. D. H.*

Fig. 1, Vertical section of ccrona; 2, filaments of corona; 3, part of the membrane of the inner corona seen from within :—*all enlarged.*

Tab. 7043.

LILIUM nepalense.

Native of the Central Himalayas.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Lilium, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 816.)

Lilium (Archelirion) *nepalense;* bulbo rhizoma proferente, caule stricto erecto 2–3-pedali, foliis oblongo-lanceolatis acutis alternis sessilibus viridibus lucidis 5-nervatis, floribus 1–5 racemosis vel corymbosis, bracteis foliaceis interdum verticillatis, pedicellis cernuis, perianthio magno infundibulari extus luteo-viridulo intus luteo deorsum nigro-purpureo suffuso, segmentis oblanceolato-oblongis acutis sub anthesin supra medium falcatis, staminibus limbo distincte brevioribus, stylo antheras eminente.

L. nepalense, *D. Don in Trans. Wern. Soc.* vol. iii. p. 412; *Prodr. Fl. Nep.* p. 52; *Wallich Plant. Asiat. Rar.* vol. iii. p. 67, t. 291; *Cat.* No. 5078; *Kunth Enum.* vol. iv. p. 267; *Baker in Journ. Linn. Soc.* vol. xiv. p. 231; *Elwes Monogr.* tab. 5 B.

L. ochroleucum, *Wallich in Herb. Lindley.*

Since Lilies have been so much in favour, this has been the only Indian species which we did not possess in cultivation. It is so very distinct both botanically and horticulturally, that when it was imported by Messrs. Hugh Low and Co., and exhibited in flower last autumn at the Royal Horticultural Society, it created quite a sensation, and received a first-class certificate. Woodcuts of it have been given in the "Journal of Horticulture" and the "Gardener's Chronicle," and a coloured plate in the "Garden." It was discovered by Wallich's collectors more than fifty years ago in the high mountains of Nepaul. The plant imported by Messrs. Low well represents Wallich's type. In my monograph in the Journal of the Linnean Society, I referred to the same species dried specimens gathered by Dr. Thomson in Garwhal, by Strachey and Winterbottom at Naini Tal, and by Jacquemont at Simla. These require further investigation in a living state. We are indebted to Messrs. Low both for a

living plant, and for the flowering specimens from which our drawing was made.

DESCR. *Bulb*, in the only specimen I have seen, sending out a slender rhizome. *Stem* slender, erect, terete, two or three feet long, with leaves scattered up to the inflorescence, but only distant and rudimentary in the lower third. *Leaves* oblong-lanceolate, acute, sessile, alternate, reaching a length of four or six inches, tapering gradually from the middle to both ends, firm in texture for the genus, bright green and glossy above, with two vertical nerves on each side of the midrib. *Flowers* one to five, racemose or corymbose, with the foliaceous bracts sometimes congested into a whorl; pedicels ascending, cernuous. *Perianth* four or five inches long, greenish-yellow outside, yellow within, flushed, except in the upper third, with purplish-black; segments oblanceolate-oblong, acute, narrowed gradually from above the middle to the base and point, reflexing when the flower is fully expanded only in the upper half or third. *Stamens* above an inch shorter than the perianth-segments; filaments filiform, purplish-black; anthers nearly an inch long. *Ovary* cylindrical; style overtopping the stamens; stigma capitate.—*J. G. Baker.*

Fig. 1, Back view of anther; 2, front view of anther; 3, pistil complete:—*all enlarged.*

TAB. 7044.

SARCOCHILUS LUNIFERUS.

Native of Burma.

Nat. Ord. ORCHIDEÆ.—Tribe VANDEÆ.

Genus SARCOCHILUS, *Br.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 575.)

SARCOCHILUS *luniferus*; acaulis, radicibus numerosissimis elongatis compressis, foliis rarissime evolutis, pedunculo rachi racemi et ovario hirtellis squamis paucis ovatis acutis instructo, racemo elongato decurvo multifloro, bracteis ovatis membranaceis, ovario brevi, sepalis petalisque consimilibus ellipticis obtusis flavis aurantiaco-maculatis, labello albo carnoso in calcem dorso obtusum producto, lobis lateralibus magnis erectis ovato-oblongis obtusis; lobo medio minuto revoluto ovato, disco papilloso inter lobos laterales crasse bicarinato, anthera hemispherica 3-calcarata, calcaribus 2 lateralibus setaceis antico breviore robustiore, polliniis 2 globosis stipite elongato lineari affixis.

S. luniferus, *Benth. mss.*

Thrixspermum luniferum, *Reichb. f. in Gard. Chron.* 1868, p. 786.

Sarcochilus, as reconstituted in the "Genera Plantarum," consists of a very difficult group of thirty or forty Indian, Malayan, Australian, and Pacific Island Orchids, differing greatly in habit, and out of which some eight or ten genera had been differentiated before a better knowledge of their characters, and the discovery of other species modifying the value of these characters, suggested the propriety of uniting all under one genus. For this genus Reichenbach proposed to adopt the name of *Thrixspermum*, Loureiro (1790), as being anterior to *Sarcochilus*, Blume (1810), a course which Bentham did not adopt in the "Genera Plantarum," on the very sufficient grounds that the name is utterly bad in construction, and because the description of the latter is so incomplete that it would have been impossible to have recognized the plant intended by it, but for a scrap preserved in Loureiro's Herbarium preserved in the British Museum. On the other hand, *Sarcochilus* has been recognized by all authors for three-quarters of a century. Many species have been described under that generic name; and there is a well-known genus of *Tiliaceæ*, *Trichospermum*, Blume.

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Professor Reichenbach, who first described *S. luniferus* remarks that the curious spurs or tails in the anther are not peculiar to it, but are found in a Viti species. The very appropriate specific name which he gave to the Burmese plant refers to the form of the lip as seen on a front view. In its ordinary state leaves are not developed, but Mr. Watson informs me that one specimen at Kew bore several small leaves, and Mr. Parish notes that in its native state leaves occasionally appear.

S. luniferus was discovered by the Rev. Mr. Parish near Moulmein in Tenasserim, and was introduced by Messrs. Veitch in 1868. The plant here figured was sent by Dr. King from the Royal Botanical Gardens, Calcutta, in 1887, and flowered in the following year.

Descr. *Leaves* in the ordinary state of the plant none. *Roots* very many, three to five inches long, flattened, one-sixth of an inch broad. *Peduncle* one to two inches long, stout, decurved, hispidulous, as are the rachis of the raceme and ovary, green, purple-spotted, with two to three white ovate acute scales. *Raceme* three to five inches long, drooping, many-flowered; bracts minute, ovate, membranous; ovary very short; flowers half an inch in diameter. *Sepals* elliptic-oblong, obtuse, and similar petals yellow spotted with orange. *Lip* white, saccate, with large erect ovate obtuse side-lobes, a minute recurved mid-lobe, and two thick ridges on the papillose disk. *Anther* hemispheric, with a straight lateral marginal horizontal setiform spur on each side, and a much shorter one in front. *Pollinia* two, globose, on a long linear stipes.—*J. D. H.*

Fig. 1, Column and lip; 2, front view of lip and column; 3, lip viewed from the position of the column; 4 and 5, anther; 6 and 7, pollinia:—*all enlarged.*

Tab. 7045.

STUARTIA Pseudo-camellia.

Native of Japan.

Nat. Ord. Ternstrœmiaceæ.—Tribe Gordonieæ.

Genus Stuartia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 185.)

Stuartia *Pseudo-camellia*; ramulis foliisque glabris, foliis breviter petiolatis elliptico-lanceolatis acutis v. acuminatis subserratis, floribus amplis subglobosis, sepalis obovato-rotundatis serrulatis ciliatis extus dense sericeo-lanuginosis, petalis late cuneato-obovatis concavis crenato-dentatis dorso marginibus exceptis sericeo-lanuginosis, ovario sericeo-tomentoso, stylis elongatis glabris alte connatis, capsula late ovoideo-ellipsoidea, valvis acuminatis.

S. Pseudo-camellia, *Maximov. in Bull. Acad. Petersb.* 1867, 429; *Mel. Biolog.* vol. vi. p. 201 (1867); *Franchet & Savat. Enum. Plant. Jap.* vol. i. p. 60; *Gard. Chron.* 1888, vol. i. 187, f. 22; *Ito Pl. Bot. Gard. Koishik.* vol. ii. t. 23.

S. grandiflora, *Siebold, ex Briot in Rev. Horticole*, 1879, p. 430, *cum Ic.*

A congener of the North Carolinan *Stuartia pentagyna*, L'Herit (Tab. nost. 3918), an old favourite in shrubberies and gardens, but which, like so many other beautiful deciduous-leaved North American trees and shrubs, has been so entirely neglected of late years, that its name is not to be found in Decaisne and Naudin's "Handbook of Hardy Trees, Shrubs, and Herbaceous Plants." A reference to the plate of the American plant cited above shows that the name of *grandiflora* adopted by the "Revue Horticole" was not well chosen for the Japanese species, for the flowers of its American congener are almost twice as large. The genus *Stuartia* possesses an interest in being one of those that prove incontestably the close relationship between the Floras of Japan and of the Eastern United States, there being two species in each of those countries. For the synonym *S. grandiflora* (published twelve years after that of Maximovicz) I can find no authority but the "Revue Horticole," which attributes it to Siebold, but gives neither date nor place of publication; it is hence probably

a previously unpublished name. According to the same authority, the plant had been for some years previously (to 1879) in cultivation on the Continent, it having seeded in 1878 with Messrs. Thibaut and Keteleer, at Sceaux.

The specimen from which the plate here given was taken was exhibited at a meeting of the Royal Horticultural Society by Messrs. Veitch, to whom I am indebted for the opportunity of figuring it. The plant flowers in July, is quite hardy, and a valuable acquisition to the Fruticetum Britannicum.

Descr. A dense shrub; branchlets and leaves glabrous. *Leaves* two to three inches long, elliptic-lanceolate, acuminate, finely serrate, many-nerved, yellowish-green above, paler beneath; petiole a quarter to one-third of an inch long. *Flowers* axillary, solitary, globose, about two inches in diameter, white, pedicel half an inch long; bracts close under the calyx, ovate, acute, shorter than the sepals. *Sepals* orbicular, obovate, obtuse, serrulate, coriaceous, closely imbricate, densely silky. *Petals* orbicular, very concave, margin irregularly crenate, back densely silky within the margin. *Stamens* very many, incurved; anthers small, orbicular, orange-coloured. *Ovary* oblong, densely silkily villous, narrowed into a long, erect, columnar glabrous style, formed of the connate styles of the five-celled ovary; stigmas short, recurved. *Capsule* one inch long, turgidly ovoid; valves beaked, margins recurved after dehiscence.—*J. D. H.*

Figs. 1 and 2, Front and back views of anthers; 3, ovary; 4 transverse section of do.; 5, ovule:—*all enlarged.*

Tab. 7046.

OPUNTIA polyacantha.

Native of the United States.

Nat. Ord. Cacteæ.

Genus Opuntia, *Mill.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 851.)

Opuntia (Ellipticæ) *polyacantha*; prostrata, radice fibrosa, articulis adscendentibus ellipticis ovatis obovatisve compressis, foliis minutis subulatis, pulvillis subconfertis pallide tomentosis setosis et armatis, aculeis radiantibus albidis 1–5 interioribus longioribus patulis albidis v. rufescentibus, floribus sulphureis raro purpurascentibus, ovario obovoideo pulvillis aculeatis instructo, sepalis tubi ad 13 interioribus obovatis, petalis 12–20 obovato-orbiculatis retusis apiculatis, stigmatibus 5–8 viridibus in capitulum profunde sulcatum dispositis, bacca ovoidea v. subglobosa pulvillis albo-tomentosis setosisque instructa, seminibus magnis late et subacute marginatis.

O. polyacantha, *Haworth Suppl. Plant. Succulent.* p. 82 (1819).

O. missouriensis, *DC. Prodr.* vol. iii. p. 472; *Engelmann in Proc. Amer. Acad.* vol. iii. p. 299; *in Bot. Whipple Exped.* vol. iv. p. 44, t. xiv.; *in Bot. King's Exped.* vol. iii. p. 118; *in Bot. Simpson's Exped.* p. 442; *in Bot. Wheeler's Exped.* p. 129.

Cactus ferox, *Nutt. Gen. N. Amer. Pl.* 296; *non Willd.*

This is the third hardy *Opuntia* figured in the Botanical Magazine, the others being *O. vulgaris* (Tab. 2393) and *O. Rafinesquii* (Tab. 7041). It was discovered by Nuttall on the Upper Missouri in 1811, and called by him *Cactus ferox*, a specific name that might well have been retained, for Engelmann states that the original form greatly deserves it, were it not that there is an earlier *C. ferox*, of Willdenow, a native of tropical America, which also being an *Opuntia* claims the name. The present plant was first published by Haworth in 1811 under the very appropriate name of *O. polyacantha*, which was changed to *O. missouriensis* by De Candolle for no assigned reason. In this De Candolle has been followed by Engelmann in his various works on the American Cacti, who strangely altogether omits any reference to Haworth's name or work. According to the last-named author, it was cultivated at Chelsea, in 1814.

Opuntia polyacantha is a very wide-spread and variable

species. Engelmann describes it most fully in his account of the Cacti of Whipple's Expedition along the 35th parallel, where however, through some oversight, he places it in the section with tuberous roots, whilst describing these as fibrous. He there states that it extends from the Upper Missouri to the 49th degree of N. Lat., and westwards from the Missouri to 112° E. In later publications he gives the Salt Lake Valley, where it ascends to 6500 ft., and New Mexico. In Kew Herbarium there are species from the plains of the Sacketchawan in Lat. 52° N., collected by Bourgeau, and from British Colombia, between the Walla Walla and Colvile, collected by Lyall.

Engelmann distinguishes six varieties, by the form of the joints, number length and colour of the spines, size of the berry, and size and margins of the seeds, but I fail to refer the Kew plant definitely to any one of these more than another. The Kew specimens flowered in the Royal Gardens in a cold frame during the summer months. It had stood unprotected for a good many years without flowering.—*J. D. H.*

Fig. 1, Cluster of spines; 2, back, and 3, front view of stamens; 4, stigmas: —*all enlarged.*

Tab. 7047.

CHIRONIA peduncularis.

Native of South Africa.

Nat. Ord. Gentianeæ.—Tribe Chironieæ.

Genus Chironia, *Linn.*; (*Benth et Hook. f. Gen. Pl.* vol. ii. p. 805.)

Chironia *peduncularis*; perennis, suffruticosa, decumbens, ramis teretibus, foliis sessilibus e basi cordata v. rotundata ovato-lanceolatis acutis v. acuminatis trinerviis, floribus longe pedicellatis amplis, calycis lobis lineari-lanceolatis acuminatis, corollæ tubo terete, limbi rubro-purpurei lobis ovatis acuminatis tubum æquantibus, antheris linearibus erectis filamento longioribus, capsula oblongo-lanceolata exsucca.

C. peduncularis, *Lindl. in Bot. Reg.* t. 1803; *Griseb. in DC. Prodr.* vol. ix. p. 39.

C. latifolia, *E. Meyer Comm. Pl. Afr. Austr. fasc.* ii. p. 178.

C. trinervia, *Ann. de Flore de Pomone*, t. 158.

C. trinervis, *Paxt. Mag.* vol. iii. t. 149.

C. Barclayana, *Hort.*

A native of South Africa, where it has a very wide range indeed on the eastern side of the continent, from Algoa Bay in 34° S., north-eastward to Zululand in Lat. 28° S., inhabiting moist ground, where it forms a weak trailing or spreading bush. Of its original introduction into this country, nothing is known. Lindley, who first described it in 1835, speaks of it as a plant cultivated in gardens under the name of *C. trinervis* (not of Linnæus), and of which the native country was unknown. From that time it seems to have gone out of cultivation, which is the more remarkable, for Lindley states that "nothing can be easier than its management, as it grows in any kind of soil, will thrive out of doors in summer, and will survive the winter without injury in a very indifferent greenhouse; further, that it is propagated easily by cuttings, and is covered with a succession of purple flowers from July to October." No doubt its straggling habit is not in its favour; but this would yield to skilful treatment.

Like so many of the species of the *Gentianeæ*, and all the Chironias, *C. peduncularis* contains a very strong

bitter, which, as Lindley remarks, is most remarkable, even among its bitter neighbours. I find that this property is not retained in the Herbarium specimens. Another curious remark concerning it is contained in a note by Burchell, the South African traveller, namely, that "the flowers expand in the Herbarium." I suppose he means that they retain life after the death of the foliage.

This is the fourth species of Cape Chironia figured in this work, and is the handsomest of them all; the others are *C. baccifera*, Linn. (tab. 233), *C. linoides*, Linn. (tab. 511), and *C. frutescens*, Linn. (tab. 37), to which *C. decussata*, Vent. (tab. 707), and *C. angustifolia*, Sims (tab. 818), have been reduced as varieties, and together placed in another genus (*Orphium*, E. Mey.). The fact of all these appearing in the very early numbers of this Magazine, and none since, is evidence of the favour in which Cape plants were held in the beginning of the century, and their subsequent abandonment, together with the flue-heated houses in which they throve. The reintroduction of *C. peduncularis* is due to Mr. Watson, sub-curator of Kew, who collected seeds of it during a visit to Algoa Bay in 1887, from plants growing amongst grass in very wet sandy soil close to the sea-shore. It also grows far inland.—*J. D. H.*

Fig. 1, Corolla laid open; 2, front, and 3, back view of stamens; 4, calyx and ovary:—*all enlarged.*

Tab. 7048.

EREMOSTACHYS laciniata.

Native of Western Asia.

Nat. Ord. Labiatæ.—Tribe Stachydeæ.

Genus Eremostachys, *Bunge*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1215.)

Eremostachys (Phlomoides) *laciniata*; caule robusto elato in spicam elongatam densissime albo-lanatam desinente, foliis radicalibus amplissimis petiolatis bipinnatisectis glabriusculis, segmentis oblongo- v. lineari-lanceolatis inciso-serratis, caulinis sessilibus diminutis, floralibus ovato-oblongis flores subæquantibus, verticillastris numerosis multifloris subremotis, bracteis linearibus-lanceolatis, floribus sessilibus magnis, calyce tubuloso-campanulato dense floccoso, ore truncato, dentibus rectis brevissimis spinescentibus, corolla ochroleuca v. luride purpurea, galea villosa.

E. laciniata, *Bunge in Ledeb. Fl. Alt.* vol. ii. p. 416 (*in Adnot.*); *Benth. in DC. Prodr.* vol. xii. p. 547; *Boiss. Fl. Orient.* vol. iv. p. 793; *C. A. Meyer Ind. Pl. Caucas.* p. 96; *Lindl. in Bot. Reg.* 1845, p. 52; *Regel Gartenfl.* vol. viii. p. 33, t. 249; *Lindl. & Paxt. Fl. Gard.* vol. ii. p. 83, fig. 176.

P. macrocheila, *Jaub. & Spach. Ill. Pl. Orient.* vol. v. p. 13.

E. iberica, *Visiani in Ann. Sc. Nat. Ser.* 3, vol. vii. p. 380.

Phlomis laciniata, *Linn. Sp. Pl.* p. 819; *Ait. Hort. Kew. Ed.* 2, vol. iii. p. 408; *Sweet. Brit. Fl. Gard.* vol. i. t. 84.

Moluccella lanigera, *Poir. Encycl. Suppl.* vol. iii. p. 722.

Though never hitherto figured in the Botanical Magazine, this noble hardy perennial has been long cultivated in England, having been introduced by Philip Miller in 1731 from the Levant, and described in the first edition of Miller's Gardener's Dictionary as "The Eastern Jerusalem Sage with jagged leaves." It is the easternmost representative of a genus that extends into Siberia, Affghanistan, and Central Asia, but it has itself a narrow distributional area, being confined to the southern Caucasian region on the north, reappearing in the Levant, where it occurs throughout the length of Syria and Palestine, and extends a little way westward into the ancient Cilicia (the modern Adania).

Our plant flowered in the Royal Gardens in June of last year, and presented a very striking appearance.

Descr. A stately herbaceous perennial. *Stem* one to

three feet high including the spike, robust, leafy, clothed with flocculent white wool, as thick as the thumb at the base. *Radical leaves* two feet long and a foot broad, ovate in outline, glabrous, bipinnatipartite; segments oblong- or linear-lanceolate, inciso-serrate, green above, much paler beneath; cauline leaves smaller, sessile and less compound; floral ovate, inciso-pinnatifid, as long as the flowers. *Whorls* many, rather distant, many-flowered; bracts lanceolate. *Calyx* three-fourths of an inch long, tubular-campanulate, terete, densely flocculent; mouth truncate with five minute bristles or teeth. *Corolla* nearly two inches long, pale dull-red purple, with a bright-red mid-lobe of the lower lip, villous, especially the galeate upper lip; tube glabrous; side-lobes of lower lip broad, disk between them dull yellow. *Stamens* glabrous. *Ovary* hispid.—*J. D. H.*

Fig. 1, Section of calyx, showing the ovary; 2, corolla with the lower lip removed; 3, stamens in position; 4 and 5, stamens :—*all but fig.* 2 *enlarged.*

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Tab. 7049.

DELPHINIUM Zalil.

Native of Khorasan.

Nat. Ord. Ranunculaceæ.—Tribe Helleboreæ.

Genus Delphinium, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 9.)

Delphinium (Delphinastrum) *Zalil*; perenne, erectum, puberulum, caule subsimplici, foliis tri- triter-natipartitis lacinia media interdum pinnatipartita superioribus simplicioribus supremis bracteisve simplicibus, segmentis linearibus acuminatis rigidis, marginibus recurvis, petiolo basi non dilatato, racemis laxifloris, floribus primulinis, pedicellis pubescentibus, sepalis late ovatis obtusis, calcare recto sepalis æquilongo, apice attenuato, petalis angustis 2-fidis intus barbatulis, filamentis puberulis basi dilatatis, carpellis 3 glabris, stylo recto, folliculis 3 oblongis 5-costatis reticulatisque glabris, seminibus subquadratis transverse fimbriato-lamellatis.

D. Zalil, *Aitchison & Hemsley in Trans. Linn. Soc. Ser.* 2, vol. iii. p. 30, t. 3; *Vien Illust. Gartenzeit*, vol. xiii. (1888) p. 12, *cum Ic. xylog.*

As a plant of economic value, this is one of the most interesting discoveries of the Affghan Delimitation Commission, and our knowledge of it is due to the fact that the Indian Government directed a competent botanist, Dr. Aitchison, F.R.S., to accompany that important geographical operation. In the work cited above, Dr. Aitchison (p. 31) thus describes the Persian Zalil: "This plant forms a great portion of the herbage of the rolling downs of the Badghis; in the vicinity of Gulran it was in great abundance, and when in blossom gave a wondrous golden hue to the pastures. In many localities in Khorasan above 3000 feet it is equally common. The flowers are collected largely for exportation, chiefly to Persia, for dyeing silk; they are also exported from Herat, through Affghanistan to Northern India, to be employed as a dye, as well as to be used in medicine." In another place (p. 20) Dr. Aitchison, speaking of the vegetation of Badghis, says, "For a short period the hillocks are tinted an exquisite blue by the flowers of *Gentiana Olivieri*, which is, as Boissier noted, a hot country Gentian. This is followed by *Delphinium Zalil*, a perennial, which throws

up a spike of bright yellow blossom, two feet in height. Its showy blossoms suddenly cover the downs, which they illuminate with their brilliant colouring, affording a sight never to be forgotten."

The fact of *D. Zalil* affording a dye-stuff is one of many evidences of our ignorance of the materials used in the industrial arts of the East. It is reasonable to suppose that the flowers have been an article of commerce for ages, and yet I am unable to find any allusion to the subject in books devoted to the Economic Botany of India or to its manufactures. It is to be hoped that this may meet the eye of some intelligent official in the British Indian service, who might ascertain to what purpose the imported Zalil is put.

D. Zalil does not accord well with any section of *Delphinastrum*, as these are defined by Boissier. Regel, who was consulted as to its affinity, and whose great knowledge of Oriental plants is unquestioned, pronounced it to be possibly *D. ochroleucum*, a Soongarian species, reduced by Boissier (vol. i. p. 89) to a form of the polymorphous *D. hybridum*, which has white, blue, and scarlet flowers; but that species belongs to the division with a dilated base of the petiole, with the lower petals equalling or exceeding the sepals, and with other discordant characters; yet I know no nearer affinity.

The specimen figured was raised from seed sent to Kew by Dr. Aitchison in September, 1886, and which flowered in July of last year.—*J. D. H.*

Fig. 1 and 2, Petals; 3, carpels:—*all enlarged.*

Tab. 7050.

IRIS Barnumæ.

Native of Armenia.

Nat. Ord. Irideæ.—Tribe Moræeæ.

Genus Iris, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 686.)

Iris *Barnumæ*; rhizomate brevi, foliis linearibus complicatis glaucescentibus semipedalibus, caule brevi monocephalo, spathæ valvis lanceolatis post anthesin herbaceis, perianthii tubo ovario æquilongo, limbo saturate purpureo segmentis exterioribus atro-purpureis obovato-cuneatis reflexis barbâ diffusa pilis luteis purpureo-capitatis præditis, segmentis interioribus orbiculari-unguiculatis erectis conniventibus exterioribus majoribus, antheris filamento longioribus, styli ramis latis dorso convexis cristis deltoideis, capsulis ellipsoideo-trigonis, seminibus magnis conspicue strophiolatis.

I. Barnumæ, *Foster & Baker in Gard. Chron.* 1888, vol. ii. p. 182.

During the last ten years our knowledge of Irises has been greatly enlarged, and instead of about a hundred species for the whole of the north temperate zone, we now know a hundred and forty or a hundred and fifty, most of which are in cultivation. A large proportion of the new discoveries have been made in different parts of Asia. The present plant is a very handsome and distinct novelty. It was sent to Professor Foster by Mrs. Barnum, of the American Mission at Kharput, from the hills two hours distant from Van in Armenia. It has a distinctly concentrated beard, as in the common German Irises, and the colour of the flower is dark purple, without veins of a distinctly different shade; but in other respects, in its mode of growth, habit, and leaves, it agrees with the section *Oncocyclus*, all the species of which inhabit the Oriental region. Our drawing was made from specimens sent by Professor Foster at the beginning of last June.

Descr. *Rhizome* like that of an *Oncocyclus*, shortly creeping with the new buds soon detaching themselves from the old stock. Produced *leaves* five or six to a tuft, linear, complicate, pale glaucous green, strongly ribbed, half a

foot long at the flowering time. *Stem* one to six inches long, one-headed, bearing a single reduced leaf. *Spathes* one-flowered; valves lanceolate, two or two and a half inches long, herbaceous till after the flower fades. *Ovary* cylindrical-trigonous, under an inch long, shortly pedicellate. *Perianth-tube* as long as the ovary; limb dark purple; outer segments obovate-cuneate, purplish-black, about two inches long by an inch broad, reflexing from half-way down, furnished down the claw with a beard of yellow hairs tipped with purple; inner segments orbicular-unguiculate, erect, connivent, larger and brighter-coloured than the outer. *Style-branches* above an inch long, very convex on the back; crests deltoid. *Capsule* ellipsoid-trigonous. *Seeds* large, with a conspicuous pale strophiole. *J. G. Baker.*

Fig. 1, Front view of anther; 2, back view of anther; 3, top of style-branch, with crests:—*all more or less enlarged.*

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Tab. 7051.

CALANDRINIA oppositifolia.

Native of Oregon and California.

Nat. Ord. Portulaceæ.

Genus Calandrinia, *H. B. & K.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 158.)

Calandrinia *oppositifolia*; perennis, radice fusiformi carnoso, foliis radicalibus confertis oblanceolatis obtusis, caulinis inferioribus oppositis v. suboppositis, caulibus scapisve elongatis prostratis longe nudis, apicibus ascendentibus paucifloris, floribus amplis longe pedicellatis, bracteis parvis, sepalis orbicularibus dentatis eglandulosis, petalis 10 lineari-oblongis, stigmatibus 5, seminibus estrophiolatis.

C. oppositifolia, *S. Wats. in Proc. Amer. Acad.* vol. xx. p. 355; *A. Gray l. c.* vol. xxii. p. 276 (sub *C. Cotyledon*).

Of the genus *Calandrinia* (of which upwards of sixty species are known) several have been figured in this work, chiefly South American, some of which, as *C. grandiflora*, Lindl., t. 3369, and *C. speciosa*, Lindl., t. 3379, are large-flowered and very handsome plants. These, however, are warm country annuals with five petals, whereas *C. oppositifolia* belongs to a small section of the genus that inhabits mountain regions in North America, with perennial fleshy roots, and six to ten petals, and differs further in having smooth shining seeds.

C. oppositifolia is a native of the mountains of Oregon and North California, and closely resembles *C. Cotyledon*, another species of those regions, differing chiefly in habit. The delicacy of its white blossom is its great recommendation to the Horticulturist. The plants here figured were raised from seed sent from the Harvard Botanical Gardens, which flowered in the Royal Gardens in the summer of last year.

Descr. *Root* fusiform, fleshy, crown throwing out a tuft of leaves and prostrate terete fleshy flowering stems, which are six to ten inches long, few-flowered, about as thick as a crow-quill, greenish-white, and succulent. *Leaves* two to four inches long, the few on the flowering stems opposite

or subopposite, oblanceolate, obtuse, narrowed into short thick petiole, green and glistening above from the cellular surface, paler beneath. *Flowers* three to four on each flowering stem, very irregularly placed towards its ascending apex, two inches in diameter, pearly-white; pedicels very variable in length, one to three inches. *Calyx* of two rounded sepals, connate to the middle, the free part denticulate. *Petals* ten, linear-oblong or obovate, obtuse, somewhat recurved. *Stamens* not very numerous; filaments slender, connate in a ring at the base of the corolla; anthers small, linear-oblong. *Ovary* obovoid; style short, with five stigmatic erect branches. *Seeds* on a free basilar placenta, smooth, estrophiolate.—*J. D. H.*

Fig. 1, Calyx with ovary; 2, stamens; 3, dorsal view of an anther; 4, ovary; 5, young seeds on placenta; 6, young seed:—*all enlarged.*

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Tab. 7052.

PASSIFLORA Hahnii.

Native of Mexico.

Nat. Ord. Passifloreæ.—Tribe Passifloreæ.

Genus Passiflora, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 810.)

Passiflora (Granadilla) *Hahnii*; glaberrima, ramulis gracillimis, foliis petiolatis peltatis late ovatis acutis 2-nerviis utrinque ad apices nervorum minute dentatis supra viridibus subtus pallide fusco-purpureis et reticulatim nervosis, margine ad basin glandulis rubris ornato, stipulis reniformibus denticulatis, floribus axillaribus solitariis pendulis longe gracile pedicellatis, bracteis 2 late ovato-cordatis apiculatis, sepalis petalisque subæquilongis ovato-oblongis apicibus rotundatis, corona exteriore e filamentis flexuosis apice clavellatis aurantiacis, interiore e membrana sulcata margine inflexo, ovario gynophoro brevi sessile.

P. Hahnii, *Masters in Mart. Fl. Bras. Passifl.* p. 535; *in Trans. Linn. Soc.* vol. xxxvii. p. 628; *in Journ. Hort. Soc.* No. iv. p. 144; *in Gard. Chron.* 1871, p. 73, and 1878, pt. ii. p. 304, fig. 55; Icon iterat in 1879, pt. ii. p. 505, f. 81; *T. Moore in Florist. & Pomolog.* 1883, p. 161, t. 597.

Disemma Hahnii, *Fournier in Rev. Hortic.* 1869, p. 430, *cum Ic.*

A very elegant Passion-flower, of which the exact native locality is unknown, though there is no reason to doubt the authority of the French Gardens, from which it was introduced into England, and which give it the wide country of Mexico. It was first described as a species of *Disemma* in 1869 by Fournier, from specimens that flowered in the Jardin de Plantes, and of which seeds were sent from Mexico by its collector, M. Hahn. *Disemma*, which had latterly been regarded as a section of *Passiflora*, has been abolished by Dr. Masters in his exhaustive work on the *Passifloreæ* (Contribution to the Natural History of the *Passifloraceæ*, Trans. Linn. Soc. xxvii. 593); and *P. Hahnii* is there relegated to a section of his sub-genus *Granadilla*, differing from the true Granadillas in the folded fringed edges of the membranous corona.

The specimen figured flowered in the Royal Gardens in the summer of last year.

Descr. A lofty climber, quite glabrous. *Branches* very slender, pendulous, terete. *Leaves* about three inches long by two and a half broad, petioled, peltate, membranous,

broadly ovate, acute, three-nerved, quite entire except a minute marginal tooth at the termination of each nerve; base rounded or retuse, with a series of minute marginal red glands; dull green above, beneath dull red-purple and reticulately veined, nerves very slender; petiole one to one and a half inches, slender, eglandular. *Stipules* three-quarters of an inch to one inch broad, sessile, reniform, denticulate, pale purplish and reticulate; bracts two, appressed to the flower, sessile, broadly ovate, apiculate, subcordate, half the length of the sepals, pale purplish and reticulate. *Tendrils* axillary, very slender. *Flowers* solitary, axillary, pendulous, long-pedicelled, three inches in diameter. *Sepals* ovate-oblong, tip rounded, concave, very pale green, with three green nerves on the back. *Petals* like the sepals, but whiter. *Outer corona* of several series of orange-yellow flexuous filaments three-quarters of an inch long, with clavate tips; inner corona a low sulcate crenate inflexed membrane with thickened margins. *Gynophore* short; ovary subglobose, sessile on a short gynophore, and styles green, glabrous.—*J. D. H.*

Fig. 1, Vertical section of corona; 2, filaments of corona; 3, part of the membrane of the inner corona seen from within :—*all enlarged.*

TAB. 7053.

LICUALA VEITCHII.

Native of Borneo.

Nat. Ord. PALMEÆ.—Tribe CORYPHEÆ.

Genus LICUALA, *Thunb.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 928.)

LICUALA *Veitchii*; foliis amplis breviter petiolatis orbiculari-flabellatis convexis plicis innumeris leviter arcuatis læte viridibus ima basi rotundata, marginibus breviter fissis, segmentis $\frac{1}{2}$-$\frac{2}{3}$ uncialibus oblongis obtuse 2-fidis, petiolo lamina multoties breviore depresso trigono supra concavo subtus carinato, ligula brevissima, marginibus crebre breviter spinosis, vagina brevi, spadice gracili elongato, spathis tubulosis viridibus breviter fissis, ramulis floriferis distantibus 2–3-pollicaribus laxifloris, floribus parvis sessilibus, calycis viridis lobis triangularibus, petalis triangulari-ovatis coriaceis apicibus inflexis, filamentis latis in tubum cylindraceum truncatum connatis apicibus liberis subulatis, antheris parvis ovatis, ovario turbinato, stylo brevi subulato.

L. Veitchii, *Watson in Gard. Chron.* 1886, pt. i. p. 139 (*nomen tantum*).

Pritchardia grandis, *Veitch Cat.* 1885, p. 54.

A singularly beautiful Palm, from the close and regular folds of its large almost orbicular bright green convex leaves, which having short petioles form a compact crown on the top of the caudex. It was, according to Mr. Watson (l. c.), introduced by Messrs. Veitch, who distributed it under the impression that it was a species of *Pritchardia*. According to a note accompanying a dried leaf from Messrs. Veitch (sent to Kew, 1883), and preserved in the Herbarium of Kew, it is a native of Sarawak in Borneo, whence it was introduced by Mr. Curtis, then collecting for Messrs. Veitch, and now superintendent of the Botanical Garden in Penang.

The plant here figured was presented to the Royal Gardens by Messrs. Veitch in 1885, and flowered in December, 1887. Being probably far from fully developed, the dimensions of the caudex, leaf, and petiole will probably exceed in a fully grown plant those given in the following description.

DESCR. *Stem* in the Kew specimen (about seven years old) very short. *Leaves* nearly two feet in diameter,

suborbicular but somewhat cuneate in the lower third, rounded at the insertion of the petiole, convex, bright green and glossy, regularly plicate in slightly curved lines, with about thirty acute folds on each side of the mesial line, and with as many oblong obtusely bifid free tips one-half to two-thirds of an inch long extending along the upper two-thirds of the leaf; petiole flattened, six to ten inches long and half an inch broad, concave above, obtusely trigonous beneath, sides armed with short stout curved prickles; ligule very short, broadly triangular; sheath short, not fibrous. *Spadix* fourteen inches long, slender, terete, green, bearing six or eight rather distant flowering branches, three to four inches long; basal spathe short; sheaths below the flowering branches two to three inches long, tubular, hardly swollen, coriaceous, green with short bifid scarious mouths. *Flowers* rather distant upon the branches of the spadix, about one-third of an inch long, sessile on the green terete rachis. *Calyx* cupular, three-lobed; tube green, lobes brown. *Petals* twice as long as the calyx, coriaceous, triangular-ovate, with inflexed tips. *Stamens* six, filaments very broad below and connate in a truncate tube, tips free, very short and slender; anthers ovoid. *Ovary* turbinate, top broadly truncate; style subulate, short, erect; stigma simple.—*J. D. H.*

Fig. 1, Flower; 2, the same with the calyx lobes and petals removed; 3 and 4, anthers and free portion of filaments; 5, vertical section of flower, showing insertion of petals, staminal tube, and the ovary;—*all enlarged.*

M.S. del, E. Bates, lith.

L. Reeve & Cº. London

Vincent Brooks Day & Son, Imp.

Tab. 7054.

SMILAX officinalis.

In order to clear up the history of this very interesting plant, the true Sarsaparilla of the British Pharmacopœia, reference has had to be made to various Herbaria (beside that of Kew), from which the required information has not been received in time for publication in this number. The description of Tab. 7054 is therefore postponed till the June Number of the Magazine.

M.S. del, E. Bates, lith.

L. Reeve & Co. London.

Vincent Brooks Day & Son, Imp

TAB. 7055.

PENTSTEMON ROTUNDIFOLIUS.

Native of North Mexico.

Nat. Ord. SCROPHULARINEÆ.—Tribe CHELONEÆ.

Genus PENTSTEMON, *Mitchell;* (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 940.)

PENTSTEMON (Genuini) *rotundifolius;* glaucus, caule gracili elongato foliisque glaberrimis, foliis inferioribus petiolatis ovato-rotundatis obtusis superioribus sessilibus late ovato-cordatis, floribus pendulis longe gracile pedicellatis in paniculas amplas laxifloras dispositis, sepalis late ovatis obtusis, corolla tubuloso-infundibulari $1\frac{1}{2}$ poll. longa pilosa aurantiaco-rubra, lobis ovato-rotundatis apiculatis, filamentis glaberrimis, staminodio filiformi clavellato glaberrimo.

P. rotundifolius, *A. Gray in Proc. Amer. Acad.* vol. xxii. p. 307; *Dewar in Gard. Chron.* 1888, vol. ii. p. 264, fig. 31; *S. Watson in Garden and Forest*, vol. i. p. 472, f. 73.

P. rotundifolius is stated by its founder, A. Gray, but doubtingly, to be a member of the group of the genus which contains *P. centranthifolius*, Benth., of California, figured in this work at Tab. 5142; but from which it differs notably in habit, in the sparingly leafy stem, and above all in the inflorescence, which in *P. centranthifolius* forms a long narrow bracteate thyrsus. They agree closely, however, in floral characters, in the naked stamens, the coriaceous foliage, slender staminode, and in the dehiscence of the anthers, the cells of which are confluent at the apex. *P. rotundifolius* is a native of the Chihahua province of Northern Mexico, a wild inhospitable country, infested by hostile Indians, traversed by a branch of the Rocky Mountains, and only lately explored, botanically and geographically. This country has yielded a rich harvest of fine plants, including a peculiar species of Pine (*P. chihahuana*, Engelm.), and large collections have been formed there by C. G. Pringle, which engaged the attention of Dr. Gray during the later years of his laborious life, and are described in his Sertum Chihahuense, published in the Proceedings of the American Academy of Sciences (vols. xxi. and xxii.). Amongst these is the subject of this plate,

discovered in 1886 by Pringle, growing pendent from the seams of dry rocks, on the Mapula Mountains, chiefly on faces not exposed to the sun.

The specimen here figured was received from Mr. Thompson of Ipswich, the introducer of so many rare and interesting Californian plants, including the *Pentstemon centranthifolius* and various congeners. It flowered in the herbaceous ground of the Royal Gardens in June, 1888, and continued in flower throughout the summer and autumn.

Descr. A hardy glaucous perennial, two feet high. *Stem* branched from the base; branches decumbent or pendulous, smooth, terete, glabrous, sparingly leafy. *Leaves*, lower petioled, one and a half to two inches long, orbicular-ovate, obtuse, very thick and leathery, base rounded; petiole stout, longer than the blade; upper leaves smaller, sessile, nearly orbicular and deeply cordate. *Inflorescence* a very lax long-branched panicle with drooping long-pedicelled flowers; pedicels one to one and a half inches long, glabrous. *Flowers* as long as the pedicels. *Sepals* ovate, acute, glabrous. *Corolla* tubular, gradually dilated upwards, and slightly swollen above the middle, ochreous red, laxly pubescent; lobes short, orbicular-ovate, or very broadly obovate, apiculate, yellow within and bordered with red. *Filaments* slender, quite glabrous; anther cells shortly oblong, divaricated, confluent at the top, forming a hippocrepiform continuous suture; staminode filiform, rather shorter than the stamen, tip clavellate. *Ovary* quite glabrous.—*J. D. H.*

Fig. 1, Calyx and style; 2, corolla laid open; 3 and 4, anthers; 5, ovary and disk:—*all enlarged.*

Tab. 7056.

SAXIFRAGA latepetiolata.

Native of Spain.

Nat. Ord. Saxifragaceæ.—Tribe Saxifrageæ.

Genus Saxifraga, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 635.)

Saxifraga (Nephrophyllum) *latepetiolata*; erecta, robusta, ebulbifera, tota cinereo-viridis et glanduloso-villosa, caule robusto subsucculento folioso, foliis infimis rosulatis longe et late petiolatis, petiolo e basi ad apicem sensim dilatato superne concavo, lamina profunde 3-loba, lobis cuneatis grosse crenatis v. lobulatis, supremis brevius petiolatis flabelliformibus, floralibus sessilibus oblongis, floribus ad apices ramorum congestis albis erectis breviter pedicellatis, calycis lobis oblongis obtusis, petalis sepalis vix duplo longioribus cuneato-obovatis 3-nerviis, staminibus inclusis, ovario infero, stylis erectis, stigmatibus capitatis.

S. latepetiolata, *Wilkomm & Lange, Prodr. Flor. Hisp.* vol. iii. p. 120; *Wilkomm Ill. Fl. Hisp.* vol. i. p. 7, t. 6.

S. geranioides, var. β. irrigua, *Wilk. in Bot. Zeit.* 1847, p. 431.

A remarkable species, owing to the great breadth of the petioles; and according to its author an extremely rare plant, having hitherto been found only on one mountain in Spain, the Sierra Sta. Maria, one of the Cerro de Chiva range in Valentia, at an elevation of about 5000 feet above the sea. There it is very rare, growing with a closely allied species, *S. Cossoniana*, Wilk., from which it differs in the shortly pedicelled flowers, small petals, and the absence of bulbs in the basal leaf sheaths. The Kew and native specimens are of an ashy-grey colour, but Wilkomm, describing the native specimens, says that the stem and leaves beneath are reddish. Its affinity is with the Pyrenean *S. geranioides*, to which species it was originally referred by its author.

The Royal Gardens are indebted to M. Barbey of Valleyres, Canton Vaud, who obligingly sent seeds in 1887, which produced plants that flowered in the open ground in April, 1888, and continued flowering till September.

Descr. A hardy biennial, of a grey-green colour, clothed

with long soft gland-tipped hairs, very viscid. *Stem* eight to twelve inches high, terete, very robust, but rather succulent. *Leaves;* lower densely rosulate, upper attenuate, and all very broadly petioled; petiole two inches long, gradually dilated from the base to the insertion of the blade, where it is one-third of an inch broad; upper surface concave, margins raised; blade reniform, deeply three-lobed, or with the lateral lobes bifid and then five-lobed; lobes cuneately flabelliform, coarsely crenate or lobulate; upper leaves shortly petioled, simply flabelliform, or cuneiform; uppermost or floral sessile, narrow, entire. *Flowers* rather crowded at the ends of the branches, shortly pedicelled, about half an inch in diameter. *Calyx-lobes* linear-oblong, obtuse, tips spreading or recurved. *Petals* hardly twice as long as the sepals, cuneate-obovate, white. *Stamens* included; ovary sunk in the calyx-tube; styles two, erect, elongate, subulate; stigmas capitellate.—*J. D. H.*

Fig. 1, Flower; 2, anther; 3, ovary and styles:—*all enlarged.*

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M.S.del.,E.Bates lith.

TAB. 7057.

LAPORTEA MOROIDES.

Native of Queensland.

Nat. Ord. URTICACEÆ.—Tribe URTICEÆ.

Genus LAPORTEA, *Gaud.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 383.

LAPORTEA (Sarcopus) *moroides*; frutex setulis acerrime urentibus pilosa, ramis crassis, foliis late ovato-cordatis subpeltatis acuminatis dentato-serratis pubescentibus villosisve, paniculis axillaribus binis foliis subæquilongis, floribus monoicis masculis minutis fasciculatis breviter pedicellatis 2-bracteolatis, perianthio 4-fido, femineis in capitula globosa congestis, perianthii sepalis extimis minimis, intimis multo majoribus cucullatis demum carnoso-incrassatis et purpureis stigmate longiusculo, achenio compresso oblique ovoideo, endocarpio leviter tuberculato.

L. moroides, *Wedd. Monogr. Urtic.* p. 142; and in *DC. Prodr.* vol. vii. pt. i. p. 88; *Benth. Fl. Austral.* vol. vi. p. 192.

Urtica moroides, *Herb. A. Cunningham.*

This is one of two or more virulently stinging nettles that infest the humid forests of Eastern tropical and sub-tropical Australia, and of which equally virulent species inhabit tropical Asia. It was discovered in Queensland by A. Cunningham, and has been since found by various collectors between Lat. 18° and 20° N. It is remarkable for the fine vinous colour of the fruiting female perianth, the two inner sepals of which gradually becoming fleshy form when ripe a globose appendage to the achene, like that of the mulberry, which they further resemble by being collected into heads. Bailey and Gordon figure this plant in their interesting little work, "Plants reputed injurious to Stock" (Brisbane, 1887), give a rude figure of it, and say that its native name is Gyrupia, and that the virulent effects of its stinging hairs have in North Queensland frequently caused the death of horses. The plant is described as a shrub or small tree in its native country, but the Kew plant formed a simple erect stout stem two feet high, with a short crown of leaves at the top, and numerous panicles of flowers from the axils

of the fallen leaves. The upper pairs of panicles were all female, the lower pairs were male.

This interesting plant, which is called the Poison-tree in Queensland, was received from Dr. de Regel, of the Botanical Gardens of St. Petersburg, in March, 1887; it flowered in a stove soon after, and the drawing of the fruit was made in April, 1888. In July of the same year it flowered again, bearing both male and female flowers. The fruit remains on the plant in a plump condition for nearly a year.

DESCR. A large shrub or small tree, clothed with very fine virulently stinging hairs. *Leaves* six to eight inches long, broadly ovate-cordate with an acute sinus often peltately attached to the petiole, acuminate, coarsely serrate, pubescent or villous especially beneath, bright green above with purplish depressed nerves, paler, and yellowish beneath with prominent nerves; petiole shorter than the blade. *Panicles* of flowers in pairs from the axils of the lowest leaves or scars of fallen leaves, peduncled, about as long as the leaves, drooping, pendulous in fruit; male panicles few and below the females. *Male flowers* minute, shortly pedicelled, pedicel bibracteolate; perianth four-cleft, four-androus, lobes obtuse; stylode minute; anthers exserted. *Female flowers* very minute, in minute globose heads on zigzag branchlets of the panicle; very shortly pedicelled; two outer sepals most minute, two upper hooded, enlarging in fruit, becoming fleshy, purple, shiny, and almost concealing the small achene. *Achenes* green, flattened, obliquely ovoid, rather beaked; endocarp covered with low tubercles.—*J. D. H.*

Fig. 1, Male flowers and bracteoles; 2, male fl. expanded; 3, female flowers; 4 and 5, fruits; 6, inner sepal; 7 and 8, immature and mature achenes:—*all enlarged.*

TAB. 7054.

SMILAX ORNATA.

(S. officinalis, *Hanbury & Flückiger*.)

Native of Mexico.

Nat. Ord. LILIACEÆ.—Tribe SMILACEÆ.

Genus SMILAX, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 763.)

SMILAX (Eusmilax) *ornata*; frutex robustus, alte scandens, multicaulis, glaberrimus, sparsim aculeatus, ramis ramulisque acute tetragonis, aculeis rectis v. recurvis, foliis amplis 6–10 poll. longis breviuscule petiolatis ovato-oblongis acuminatis 5–7-nerviis basi profunde et sæpe inæqualiter (junioribus leviter) cordatis, petiolo et interdum costa subtus pauci-aculeato, vagina angusta bicirrhosa, umbellis in paniculas breves laxas dispositis, floribus viridibus longiuscule pedicellatis, perianthii foliolis recurvis obtusis, exterioribus ovato-oblongis, interioribus angustioribus lineari-oblongis, staminibus 6, filamentis dorso gibbosis antheras obtuse apiculatas subæquantibus.

S. ornata? *Lemaire Ill. Hortic.* vol. xii. t. 439; *A. DC. Monogr. Smilac.* p. 211.

S. macrophylla, *var.* maculata, *Hort. Verschaffelt.* (*var.* variegata, *Hort. Williams*).

S. officinalis, *Hanb. & Flück. Pharmacogr.* Ed. 2, p. 704 (in note); *Bentley & Trimen Med. Plant.* vol. iv. t. 289 (non *Kunth in Humb. & Bonpl. Nov. Gen. & Sp.* vol. i. p. 271.

It is with regret that I have to introduce the subject of the present plate as having been by the distinguished authors of the "Pharmacographia" incorrectly referred to the *Smilax officinalis* of Kunth; that is, to the plant which is believed to produce one of the Sarsaparillas of commerce. That it was regarded as identical by such competent authorities as Hanbury and Flückiger, and following them, by Bentley and Trimen, is not to be wondered at when the chaotic state of our knowledge of the Sarsaparilla-producing plants is considered; for of these not one is even approximately known to botanists. It may be well, therefore, before going further, to state briefly what is known of this subject, as given in detail by Hanbury and Flückiger in their "Pharmacologia," and by Bentley and Trimen in "Medicinal Plants."

Humboldt was the first to obtain specimens of a genuine Sarsaparilla-yielding *Smilax* (which were, how-

ever, without flower or fruit). They were collected in 1805 at the village of Bajorque, on the Magdalena River, New Grenada, in about Lat. 70° N., and were described by Kunth as *Smilax officinalis*. The illustrious traveller says of it, that the root was at that time exported from Mompax and Cartagena to Jamaica and Cadiz. In 1853 the late botanical collector De Warzewicz visited Bajorque (or rather its site, for the village had been washed away), and sent leaves and roots of Humboldt's plant to Mr. Hanbury, with the information that it was no longer collected for exportation. Of these specimens Mr. Hanbury says that the root agrees with that of the Jamaica Sarsaparilla * of commerce. In 1853, and previously in 1851, the same collector had sent roots, stem, leaves, and fruit of a *Smilax* called Sarza pallida, or Sarson, from the Cordillera of Cheriqui in Costa Rica, which Mr. Hanbury found to agree, in so far as comparison was possible, with the Bajorque plant, and the root to be undistinguishable from the "Jamaica Sarsaparilla" of the shops. In 1869 Mr. White, of Medillin, in New Grenada, sent to one of the authors of the Pharmacographia leaves and roots of a Sarsaparilla collected at Patia, which apparently belonged to the same species. More recently Mr. Hanbury obtained from the Government Gardens of Castleton, in Jamaica, specimens, without flower or fruit, of the plant cultivated there, with a view to medicinal use, and of which he says that the leaves and square stem exactly agree with the Bajorque plant, but that the root is far more amylaceous than the so-called "Jamaica Sarsaparilla" of commerce. Lastly, a plant was received at Kew from Mr. B. S. Williams, of Holloway, with the garden name of *Smilax macrophylla variegata*, which Mr. Hanbury, judging from the stem and leaf, believed to be the *S. officinalis* of Humboldt. He mentions it as such in the first edition of the Pharmacographia, in a note to p. 643 (Ed. 2, p. 707), where he says that the root agrees in appearance and structure with "Jamaica Sarsaparilla." This is the plant figured as *S. officinalis* by Bentley and Trimen from Kew specimens, and which, having now flowered for

* It must be borne in mind that the term "Jamaica Sarsaparilla" does not imply that the drug so called comes from Jamaica, where no officinal Sarsaparilla is indigenous, and where its cultivation is limited, and of comparatively modern date.

the first time in Europe, is here figured in the BOTANICAL MAGAZINE. Lastly, there are at Kew five living plants of the "real Sarsaparilla of Caraccas," sent in 1879 by Dr. Ernst of that city, which, however, have never flowered.

Of all the plants here alluded to the flowers of one alone are known, and these are the males only of Mr. Williams' *S. macrophylla* (*S. officinalis* of Hanbury). It is therefore impossible to say positively whether more than two species are alluded to, and as a last resource, resort must be had to stem and leaves alone. For this purpose I have collected all the materials available to me, which consist of (1) Mr. Hanbury's collections, kindly lent for the purpose by the Pharmaceutical Society through Mr. Holmes; (2) tracings of Humboldt's specimens of Kunth's *S. officinalis*, which are preserved in the Herbarium of the Jardin de Plantes, Paris, made for me by favour of M. Bureau, and there is a similar tracing made by Mr. Hanbury in his collection; (3) a tracing of Bonpland's specimens, gathered at the same time and in the same spot as his companion's (Humboldt's); (4) a leaf of Warzewicz's plant from Cheriqui; (5) the two species (Williams' and Ernst's) cultivated at Kew. Commencing with the tracings of Humboldt's specimens, these represent a terete branch, a leaf exactly corresponding with that of Mr. Williams' plant, but along with them is represented a detached elliptic-lanceolate leaf, acute at the base, whilst the tracing of Bonpland's specimens represents only two slender branches with all the leaves elliptic-lanceolate and acute at the base. From this it would appear that Kunth's *S. officinalis* bears leaves of both forms. Unfortunately for the identification of Mr. Williams' plant with Kunth's, the latter has 4 angled branches and bears no elliptic leaves, either on young plants growing in the Economic House, or in specimens 40 ft. high growing in the Palm House; and this precludes my identifying it with Kunth's *S. officinalis*. On the other hand, Dr. Ernst's Caraccas plant has the upper leaves of the branches like those of the tracings of *officinalis*, whilst the lower leaves would appear to be less broad and less deeply cordate. In the latter respect the leaf of Ernst's plant best accords with Warzewicz's Cheriqui Sarsaparilla; and a leaf of Warzewicz's

in the Kew Herbarium, after being carefully compared with the specimens of *S. officinalis* in the Jardin des Plantes by A. de Candolle and Bentham, has recorded on an accompanying ticket, "Echantillon précieuse que nous avons comparé, M. Bentham et moi, avec le type de Humboldt et Bonpland dans l'herbier de Paris. Il est semblable, sauf la tige plus anguleux que les rameaux." The latter is perhaps not a very strong character, but such as it is, it is not shared by Williams' plant, of which the branches are as angular as the stem; whilst in Ernst's plant the stems are nearly terete throughout.

It remains to notice the Sarsaparilla cultivated in Jamaica. It is referred to in the annual Reports of the Director (Mr. Morris) of Public Gardens of the Island for 1883 and 1884 as being cultivated in a small district of the parish of St. Elizabeth, and having produced female flowers only. It is there grown like the yam, is increased by offshoots, and the root is collected two and a half years after planting. The yield was then valued at about 50*l.* per acre. According to the Pharmacographia, 1747 lbs. were imported into England from Jamaica in 1870, and 1290 lbs. in 1871; but its colour was so pale, and substance so amylaceous, that it found little favour. Mr. Morris (now Assistant-Director of Kew) informs me that there is still a considerable export of the roots, and that the cultivation is very profitable. In Mr. Hanbury's specimens the stem is strongly quadrangular, the leaves like those of the Caraccas and Cheriqui plant (narrower and less cordate than the *S. ornata*).

It is a singular fact that, though the importation of Sarsaparilla into Europe dates from before the middle of the sixteenth century, and that now no fewer than eight kinds, from as many parts of tropical America, are brought to European markets, not one should be even approximately botanically known. It may therefore serve some purpose that I should indicate the principal parts of the American continent from which the drug is, or was till lately, exported, for attention may thereby be drawn by residents to the importance of sending living plants and good dried specimens in male and female flower and fruit, if possible, of all to Kew, for growth and determination. They are, Mexico, Guatemala, Honduras, Costa Rica, New

Grenada (both from the Magdalena River and Guayaquil), Venezuela, and the Amazons River. To these must be added, as Mr. Holmes informs me, Lima (in Peru).

S. ornata was, as above stated, sent by Messrs. Williams, under the name of *S. macrophylla variegata*, to Kew, where the original plant has attained the height of 40 ft. The leaves of young plants, and of these alone, are mottled with white, whence the varietal name. It was no doubt procured from Belgium, for it is *S. macrophylla maculata* of Verschaffelt's establishment. It was published as *S. ornata* ? by Lemaire in the Illustration Horticole, who says of it, the plant was sent from Mexico to M. Verschaffelt by Ghiesbrecht, the celebrated botanical traveller. The note of interrogation after the name was intended to denote that it may not have been a new species, though unidentifiable. Though the species here figured is unquestionably the above *S. ornata*, there are two characters attributed to it which I fail to find in the Kew plant, namely, large deltoid amplexicaul stipules, and the leaf base rarely, in a young state, cuneate.

To conclude, I am disposed to think that *S. officinalis*, the cultivated Jamaica Sarsaparilla, Ernst's true Sarsaparilla of Caraccas, and *S. ornata* will prove to be as many different species; but that without male, and probably also female flowers of each, it is impossible to say more on this head.

S. ornata flowered in the Palm House at Kew for the first time in June of last year, after having been growing vigorously for about twenty years.—*J. D. H.*

Fig. 1, Male flower; 2 and 3, stamens:—*all enlarged.*

TAB. 7058.

SOBRALIA LEUCOXANTHA.

Native of Costa Rica.

Nat. Ord. ORCHIDEÆ.—Tribe NEOTTIEÆ.

Genus SOBRALIA, *Ruiz. & Pav.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 390.

SOBRALIA *leucoxantha*; caule 2–3-pedali, foliis 6-pollicaribus lanceolatis v. ovato-lanceolatis acuminatis, vaginis verruculosis, floribus maximis, bracteis lanceolatis asperis, sepalis 3-pollicaribus lineari-lanceolatis acuminatis lateralibus falcato-decurvis albis, petalis brevioribus et latioribus elliptico-oblongis obtusis albis marginibus undulatis, labelli tubo ventricoso, lamina orbiculari alba fauce aurea marginibus crenato-undulatis apice 2-loba, basi intus aurantiaco-striolata, columna tubo labelli involuta apice 3-dentata.

S. leucoxantha, *Reichb. f. Beitr. Orchid. Centr. Amer.* p. 68. *Warner & Williams Orchid Alb.* t. 271.

Of the many species of this fine genus (upwards of fifty are known), this is one of the largest flowered; its rivals being *S. macrantha* (Tab. 4446), *S. Fenzliana*, Reichb. f. in Bot. Zeit. 1852, p. 714, and *S. xantholeuca*, Hort. It is very closely allied to the first of these, and differs chiefly in the very much smaller limb of the lip, and in the pure white colour of all parts of the flower except the disk of the lip. Minor differences are the narrower leaves of *S. leucoxantha*, and the rough or minutely warted leaf-sheaths and bracts. Both are natives of the Central American States, *S. macrantha* of Guatemala, and *S. leucoxantha* of Costa Rica, near Porto Blanco, whence it was imported by Messrs. Sanders of St. Albans, to whom we also owe the *Angræcum Germinyanum* figured in this number. It has flowered in the tropical Orchid House.

DESCR. *Stems* tufted, reed-like, leafy, about 3 feet high, clothed with appressed rough leaf-sheaths. *Leaves* four to six inches long by one and a quarter to one and a half inches broad, sessile on the sheath, lanceolate, finely acuminate, closely plaited. *Floral bracts* lanceolate, one

to two inches long, rough. *Flowers* six to seven inches in diameter. *Sepals* linear-lanceolate, spreading and recurved, nearly one inch broad in the broadest part, pure white. *Petals* shorter, broader and more oblong than the sepals, obtuse, margins undulate from beyond the middle to the tip, pure white. *Lip* with the ventricose tube two inches long, embracing the column; limb two and a half inches in diameter, spreading and recurved, nearly circular in outline with a deep notch in front, margin deeply irregularly notched and waved, white, with the disk and interior of the tube suffused with golden yellow and a few brownish stripes. *Column* an inch long, deeply three-toothed at the tip.—*J. D. H.*

Fig. 1, Front, and 2, back view of column; 3 and 4, pollinia:—*all enlarged.*

M.S. del, J.N. Fitch. lith.

Vincent Brooks Day & Son, Imp.

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Tab. 7059.

ENKIANTHUS campanulatus.

Native of Japan.

Nat. Ord. Ericeæ.—Tribe Andromedeæ.

Genus Enkianthus, *Lour.*; (*Benth. et Hook.f. Gen. Pl.* vol. ii. p. 588.)

Enkianthus *campanulatus*; arboreus, ramis verticillatis, foliis petiolatis ellipticis utrinque acutis argute serrulatis apice callosis, racemis subcorymbiformibus nutantibus, pedicellis pubescentibus pedunculum superantibus, sepalis lanceolatis, corollæ cylindraceo-campanulatæ lobis brevibus rotundatis, genitalibus inclusis, filamentis villosulis, antheris glabris apice reflexo-bisetosis, ovario glabro, capsulis e pedunculo deflexo erectis, breviter cylindraceis, seminibus scobiformibus triquetris lamellato-cristatis.

Andromeda campanulata, *Miquel in Ann. Mus. Lugd. Bat.* vol. i. p. 31; *Prolus. Fl. Jap.* p. 94. *Maximovicz in Mel. Biol.* vol. viii. p. 618; *in Regel Gartenfl.* vol. xxii. (1873), p. 3, t. 747. *Franch. & Sav. Enum. Plant. Jap.* vol. i. p. 284.

The genus *Enkianthus*, of which six or seven species are known, is peculiar to the warm temperate and subtropical regions of Eastern Asia, extending in the extreme east from North Japan to South China, whilst to the west it is confined to the Eastern Himalaya. No doubt our ignorance botanically of Western China accounts for its non-appearance hitherto between such widely remote longitudes as the Eastern Himalaya (Long. 90 E.), where *E. himalaicus* (Tab. 6460) was discovered, and *E. quinqueflorus* (Tab. 1649), which is a native of South China (in Long. 115 E.).

As a genus *Enkianthus* differs from *Andromeda* technically only in the seeds, which are large with a lamellate winged testa, whilst in the latter genus they are small with an appressed smooth testa. On the other hand, in habit these genera widely differ, *Enkianthus* being really much more closely allied to *Pieris*, in which the spurs of the anthers are inserted at the back of the anther close to the insertion of the filament. Of *Enkianthus* itself there are two principal groups; one, of which *E. japonicus* (Tab. 5822) and *E. quinqueflorus* (Tab. 1649) are the representa-

tives, has the corolla with five basal gibbosities and the fruiting pedicels erect; the other, which includes the genus *Meisteria*, Sieb. and Zucc. (founded on the serrate lobes of the corolla), and which includes also *E. himalaicus* (Tab. 6460) and *E. campanulatus*, has the corolla equal at the base, and deflexed fruiting pedicels.

Enkianthus campanulatus is a native of Northern Japan, and has been found in the vicinity of Hakodadi by various collectors. In the more southern provinces of the kingdom it seems to be known only in cultivation. As a species it is hardly distinguishable from *E. himalaicus*, which has ferruginous hairs on the leaves beneath when young, longer filaments, pubescent anthers, ovary and style, and rather shorter broader capsules. The flowers of *E. himalaicus* are of a more ochreous-red. The specimen here represented was communicated in May of last year by Messrs. Veitch, who procured the plant from Japan, through their collector, Mr. Maries; it flowered in the Coombe Wood Nursery, and is perfectly hardy.

Descr. A small deciduous leaved tree; branches slender; bark light brown. *Leaves* fascicled at the tips of the branches, one and a half to two inches long, shortly petioled, elliptic-ovate, subacute, finely serrulate, narrowed into a short glabrous or slightly hairy petiole, base acute, tip glandular. *Flowers* in axillary pendulous sessile abbreviated puberulous or glabrous racemes; pedicels one-half to three-quarters of an inch. *Sepals* lanceolate, half the length of the corolla, pubescent. *Corolla* a third of an inch in diameter, shortly campanulate, shortly five-lobed, dark red, with three darker nerves on the tube answering to each lobe, base rounded; lobes rounded, spreading. *Stamens* very short, filaments subulate from a large dilated base, villous; anthers glabrous, awns as long as the cells. *Ovary* glabrous; style included. *Capsule* one-third of an inch long.

Fig. 1, Leaf, *of the natural size;* 2, flower; 3 and 4, stamens; 5, pistil :— *all enlarged.*

M.S del. J.N.Fitch lith.

Vincent Brooks Day & Son, Imp.

L. Reeve & Co. London.

Tab. 7060.

SPATHOGLOTTIS IXIOIDES.

Native of the Eastern Himalaya.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Spathoglottis, *Blume*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 511.)

Spathoglottis *ixioides*, pseudobulbis parvis depresso-conicis fere nudis, folio solitario gramineo tenuissimo basi vaginisque tubulosis puberulis, scapo gracili 1–2-flore bractea vaginante appressa puberula, floribus aureis, sepalis petalisque subæqualibus elliptico-ovatis obtusis puberulis, labello inter lobos laterales obtusos saccato, lobo medio obcordato basi utrinque appendiculato v. auriculato, disco 2-calloso puberulo.

S. ixioides, *Lindl. in Wall. Cat.* No. 3745; *Gen. & Sp. Orchid.* p. 120; *in Journ. Linn. Soc.* vol. iii. p. 22.

Pachystoma Josephi, *Reichb. fil. in Walp. Rep.* vol. vi. p. 464.

Cymbidium ixioides, *Don Prodr. Fl. Nep.* p. 36.

A very graceful terrestrial Orchid, discovered by Dr. Wallich in Nepal in 1821. It is not uncommon in the adjacent province of Sikkim, where it grows on mossy or grassy banks at an elevation of 6000 to 10,000 feet above the sea. Being gregarious in habit, it is a great ornament. Though in so far as at present known, it is confined to the Himalaya, it may prove to be a variety of the Khasian *S. pubescens*, Lindl., which extends eastwards into China (S. Fortunei, *Lindl. in Bot. Reg.* 1845, t. 19), and southwards to Burma. It differs in the more numerous flowers, more pubescent sepals and saccate midlobe of the lip.

Besides *S. ixioides*, there are seven Indian species of this genus, all well worthy of cultivation; one indeed, *A. Wrayi* (nob. in Fl. Brit. Ind. ined.), a native of Perak in the Malayan Peninsula, is a magnificent plant, with a flowering stem a foot and a half high, and flower two and a half inches across, of a bright golden colour. It is found at elevations of 4000 to 5000 feet.

The plants of *S. ixioides* figured were received from Mr. Gammie of Darjeeling in 1881, through Mr. Elwes, to both of which gentlemen Botany and Horticulture are

deeply indebted for the introduction of Eastern Himalayan plants. They flower annually about midsummer, and are grown in a pan of Sphagnum and peat, treated with abundance of water in the warmer months and with drought in winter.

Descr. *Pseudobulbs* the size of a small hazel-nut, ovoid, coated with fibrous remains of sheaths. *Leaves* two to three from each pseudobulb, eight to eighteen inches long, enclosed at the base in a tubular pubescent purplish sheath about an inch long, very narrow and grass-like, plaited. *Scapes* from separate pseudobulbs, as long as the leaves or shorter, very slender, erect, naked, one- to two-flowered; bracts appressed, ovate-lanceolate, sheathing the base of the pedicel. *Flowers* nodding, three-quarters to one and a quarter inch in diameter, bright golden yellow, with reddish specks on the disk of the lip. *Sepals* and *petals* subequal, ovate-oblong, subacute. *Lip* as long as the sepals; hypochile saccate, with the large obtuse side-lobes erect, incurved, striated with red within; epichile obcordate, with a tooth-like process or appendage or a rounded auricle at each side of the base; disk of lip with two short raised smooth ridges at the base of the epichile, and a line of hairs on each side between the side-lobes. *Column* narrowly winged above.—*J. D. H.*

Fig. 1, Side view, and 2, front view of lip; 3, column; 4, anther; 5, pollinia:—*all enlarged.*

TAB. 7061.

ANGRÆCUM GERMINYANUM.

Native of Madagascar.

Nat. Ord. ORCHIDEÆ.—Tribe VANDEÆ.

Genus ANGRÆCUM, *Thouars;* (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 583.)

ANGRÆCUM (Macroura) *Germinyanum;* caule robusto elongato scandente folioso, foliis distichis oblongis apice 2-lobis basi cordato-semiamplexicaulibus, floribus amplis axillaribus solitariis, pedunculo gracili folio multo breviore, sepalis 2-pollicaribus filiformibus decurvis, petalis consimilibus sed brevioribus et angustioribus, labello quadrato angulis obtusis apice in caudam filiformem repente angustato, columna brevissima.

A. Germinyanum, *Hort. Sanders.*

Mr. Sanders of St. Albans, the introducer of this beautiful Orchid, has been so good as to send me the following information regarding it. *Angræcum Germinyanum* was named after Count Adrien de Germiny, Gonville, France, an ardent lover of Orchids. It was discovered in 1886 in the interior of Madagascar, in the same forests with *Phajus tuberculosus* and *Humbloti*, by Messrs. Sanders' collector, Leon Humblot. The fact of its coming from a hitherto unexplored part of Madagascar abounding in novelties, together with Mr. Humblot's assurance that it was new and different from any other *Angræcum* that he had seen, appeared to warrant the giving a specific name to the plant, though then in a flowerless state. Mr. Sanders further informs me that there were about twenty plants of it imported, of which nearly all must have perished, as he had heard nothing of any of them.

It is, therefore, a peculiar satisfaction to the authorities of Kew that the plant of this fine species which Mr. Sanders liberally presented to Kew in 1886 should have flourished in that establishment. It flowered in May of last year, and again in the spring of this year. As may be supposed from its native habitat, it was grown in a very moist tropical house, fastened to a soft piece of fern-stem.

JUNE 1ST, 1889.

DESCR. *Stem* twelve to eighteen inches long, stout, scandent, with long vermiform banded roots from the nodes, leafy; nodes short, about half an inch long. *Leaves* alternate, distichous, spreading, one and a half to two inches long, sessile by a subcordate semi-amplexicaul base, linear-oblong, unequally two-lobed, very thick, bright green, margins recurved. *Flowers* pure white, solitary on short slender axillary peduncles that are much shorter than the leaves; pedicel with the ovary two-thirds to one inch long, two-bracteolate at the base. *Sepals* two and a half to three inches long, elongate-subulate from a narrowly lanceolate base, the lateral shortly spreading and then pendulous. *Petals* like the sepals, but shorter and more slender, pendulous. *Lip* quadrate, with rounded angles, an inch broad and rather less in length, sides reflexed, anterior margin suddenly contracted in the middle into a subulate at length filiform recurved tail an inch long; disk with depression at the insertion of the spur, which is slender, about twice as long as the sepals and flexuous. *Column* very short, two-winged in front; pollinia pyriform. —*J. D. H.*

Fig. 1, Column and base of lip; 2, the same viewed in front; 3, anther; 4, pollinia:—*all enlarged.*

3
2
1
4

TAB. 7062.

SOLANUM PENSILE.

Native of South America.

Nat. Ord. SOLANACEÆ.—Tribe SOLANEÆ.

Genus SOLANUM, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 888.)

SOLANUM *pensile*; scandens, sarmentosum, inerme, ramulis teretibus pubescenti-tomentosis, foliis ovatis v. ovato-cordatis acutis v. obtuse acuminatis glaberrimis supra lucidis, paniculæ pendulæ ramis simplicibus elongatis divaricato-recurvis multifloris, pedicellis breviusculis, calycis hemispherici dentibus minutis, corollæ amplæ violaceæ extus puberulæ laciniis linearibus recurvis apicibus incurvis, filamento unico cæteris duplo longiore, antheris consimilibus linearibus poris minutis terminalibus dehiscentibus, ovario conico glabro, stylo puberulo, bacca globosa violacea glabra, seminibus lentiformibus.

S. pensile, *Sentdn. in Mart. Fl. Bras fasc.* vi. *Solan.* p. 50; *Dunal in DC. Prodr.* vol. xiii. pt. i. pp. 84 and 679.

S. lætum, *Miquel Stirp. Surinam.* 139 (non *Kunze*).

S. sempervirens, *Dunal l. c.* p. 88.

S. pendulum, *Link mss.* (non *Ruiz. & Pav.*).

S. scandens, *Schomb. mss.*

S. amethystinum, *Poiteau mss.*

Witheringia pendula, *Rœm. & Sch. Syst.* vol. iii. p. 422.

Though botanically a well-known species, this lovely plant was unknown to gardens till sent to Kew in 1887 from the George Town (Demerara) Botanical Gardens by Mr. Jenman. It belongs to a section of the genus aptly called *Subdulcamara* by Dunal, the general resemblance of the species to the common *S. dulcamara* of our hedges being very obvious, the chief difference from the true *Dulcamaræ* being in the inflorescence, which in the latter is axillary or alar and corymbose, whereas in *S. pensile* and its allies it is terminal and panicled.

S. pensile is a native of English, Dutch, and French Guiana. It has also been found on the Amazons River from Para up to the Solimoes River, a branch of the Amazons, by Spruce. There are also specimens in the Kew Herbarium from Miers gathered in the Organ Mountains (Rio de Janeiro), where, however, it may have

been cultivated, as no other collector has sent it from that part of Brazil.

S. pensile requires a tropical stove, where it grows with great rapidity, for the Kew plant, which was received from Demerara in 1887, flowered in May, 1888.

Desor. A tall slender branched unarmed climber; branches terete; branchlets pubescent. *Leaves* two to four inches long, ovate or cordate-ovate, subacute or obtusely acuminate, quite entire, bright green and shining above, paler beneath with brownish nerves; petiole one-half to two-thirds of an inch long. *Panicles* large, terminal, loosely subpyramidal, pendulous, pubescent; branches alternate, distichous, recurved or ascending, four to seven inches long, many-flowered; flowers subsecund, shortly pedicelled. *Calyx* one-fourth of an inch long, shortly campanulate, terete, five-toothed, brown, pubescent. *Corolla* one and a half inches in diameter, bright violet-blue with a white star-shaped eye; segments lanceolate with incurved tips, spreading and recurved, pubescent externally. *Stamens* five, filaments of four much shorter than the anthers, of the fifth twice as long as the others; anthers one-third of an inch long, linear-oblong, straight, erect and contiguous, dehiscing by minute terminal pores. *Ovary* glabrous; style erect, pubescent. *Berry* globose, the size of a large pea, purple, shining.—*J. D. H.*

Fig. 1, Calyx and stamens; 2 and 3, short and long stamens; 4, pistil:—*all enlarged.*

Tab. 7063.

PANDANUS labyrinthicus.

Native of the Malay Islands.

Nat. Ord. Pandaneæ.

Genus Pandanus, *Linn. f.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 949.)

Pandanus *labyrinthicus*; fruticosus, 10–20-pedalis, caudicibus crassis sparse tuberculatis ramosis erecto-patentibus radices aerias validas emittentibus, foliis spiraliter trifariis anguste linearibus 2–3-ped. longis 1½ poll. latis marginibus costaque subtus spinulis subcurvis armatis supra lucidis subtus glauco-viridibus, spathis syncarpiis longioribus concavis ovato-lanceolatis spinuloso-ciliatis, syncarpiis 3–4 poll. longis ad apicem pedunculi decurvi confertis sessilibus ellipsoideo-oblongis, drupis confertissimis pollicaribus anguste oblongis infra medium compressis aureis dein elongato-hemisphericis 4-gonis rubris ungue (stigmate) brevi furcata caduca papillam relinquente terminatis, putamine crasso semitereti.

P. labyrinthicus, *Kurz. in Miq. Ann. Mus. Lugd. Bat.* ii. 53; *Seem. Journ. Bot.* vol. v. (1867), p. 103; *Journ. As. Soc. Beng.* vol. xxxviii. (1869) pt. 2, p. 147; *Bot. Zeit.* vol. lii. (1869), p. 451; *Balf. f. in Journ. Linn. Soc.* vol. xvii. p. 49; *Solms Laub. in Linnæa*, vol. xlii. p. 20.

I am indebted to Dr. Balfour for the identification of this handsome *Pandanus* with the Sumatran *Pandanus labyrinthicus*, of which there are fruits in the Museum at Kew, communicated by the late D. Hanbury, who received them from the Botanical Gardens of Buitenzong, Java. A plant of it has been in cultivation at Kew for many years, but its origin is unknown. It differs somewhat from the description of *P. labyrinthicus* in the much fewer aerial roots, which are said in the native plant to be so numerous and interlaced as to have suggested the specific name. This is, however, a very variable character, naturally depending on climate and humidity. It was most probably received at Kew from the Buitenzopg Gardens many years ago, and may be a native of other of the Malayan Islands besides Sumatra. Kurz has (in the Bengal Journal of the Asiatic Society) referred it to the section *Rykia*, of which the type is *P. furcatus*, Roxb., a common Indian species; but in *P. furcatus* the drupe is crowned by a much larger and more persistent forked claw, which

latter is so deciduous in *P. labyrinthicus*, that all traces of it are lost as the fruit ripens. Solms Laubach regards *P. labyrinthicus* as very near *P. nitidus*, Kurz (*in Journ. As. Soc. Beng.* 1869, 147, *Solms in Linnæa* xlii. 18), which is described as having the leaves shining on both surfaces, solitary erect fruits, and drupes with a shining incurved acute style terminated by an oblique subcordate stigma.

P. labyrinthicus was received and long cultivated at Kew under the name of *P. ceramicus*, a native of the Moluccas very imperfectly known. It fruited in the Palm House in December, 1888, after which the plant died, but not till a sucker was saved to form a future plant.

It may be stated here that *Pandanus unguifer* of this work (Tab. 6347) has been determined by Dr. Balfour to be the *P. minor*, Herb. Ham., of Wallich's Herbarium (No. 8592), an unpublished species found by Buchanan Hamilton in Bengal.

Descr. Plant at Kew ten feet high, consisting of one suberect main trunk about six inches in diameter, and closely ringed, together with several ascending branches from the base; aerial roots few. *Leaves* two to three feet long by one and a half inches broad, finely acuminate, margin and more or less of the costa spiny, spines short nearly straight. *Peduncle* of the female about six inches long, decurved in fruit, bearing at the apex three to six syncarpia. *Lower bract* below the syncarpia leaf-like; those next the syncarpia three to five inches long, broadly ovate-oblong, acuminate, very concave, margins and mid-rib at the back closely spinulose. *Syncarpia* two and a half to three and a half inches long, sessile, broadly ellipsoid; drupes one inch long, closely packed, narrowly oblong, lower half golden yellow, compressed, upper elongate dome-shaped, four-angled, bright orange-red, capped by the pulvinate remains of the style; putamen thick, flattened on one side.—*J. D. H.*

Fig. 1, Drupe; 2, transverse section of the same :—*both enlarged.*

M.S.del.E.Bates lith

Tab. 7064.

SYRINGA VILLOSA.

Native of Northern China.

Nat. Ord. Oleaceæ.—Tribe Syringeæ.

Genus Syringa, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 675.)

Syringa *villosa*; frutex gracilis, foliis late ellipticis ovatisve obtusis basi rotundatis rarius cuneatis subtus glaucescentibus, costa nervisque villosis rarius glaberrimis, nervis patentibus, thyrsis breviusculis erectis, floribus sessilibus pallide roseo-lilacinis, calycis dentibus brevibus ovatis subacutis, corollæ tubo longitudine vario, lobis obtusis marginibus crassis incurvis, capsula cylindraceo-oblonga obtusa.

S. villosa, *Vahl Enum.* vol. i. p. 38; *DC. Prodr.* vol. viii. p. 283; *Franchet Pl. David.* p. 204; *Decne. in Nouv. Arch. Mus. Ser.* 2, p. 41; *Helmsl. in Journ. Linn. Soc.* vol. xxvi. p. 83; *Sargent in Gard. & Forest.* 1888, p. 222, and p. 520, fig. 83.

S. pubescens, *Turcz. in Bull. Soc. Nat. Mosc.* 1840, p. 73; *Hance in Journ. Bot.* 1875, p. 133; *Sargent l. c.* 414, fig. 67.

The specific name of *villosa* is unfortunately chosen for this plant; what villousness it possesses is confined to the lower parts of the costa of the leaf beneath, and to the bases of the main nerves; such as it is, it is deciduous and often totally absent, even on the young leaves. This is the case with the specimen here figured, in which I find mere traces of hairs on some leaves and none on others. In some Chinese specimens, on the other hand, the villousness is conspicuous in the positions indicated, and consists of long spreading silvery hairs.

North China is evidently the headquarters of the genus *Syringa*. Helmsley, in his valuable "Enumeration of Chinese Plants," published in the Linnæan Society's Journal, cited above, mentions six species from that country, and there are others in the Kew Herbarium, of which the specimens are too imperfect for determination. Of these *S. oblata*, Lindl., is the nearest allied to *S. villosa*, and may be distinguished by its robust habit and more or less cordate leaves, which are green beneath and have no villous hairs.

S. villosa is a native of the Chihli province of China,

occurring on mountains near Pekin, where it was discovered by the early Jesuit missionary, Father d'Incarville, previous to 1740, who sent specimens to Jussieu that are preserved in the Museum of the Jardin de Plantes at Paris.

It has been more recently collected by Dr. Bretschneider, the learned physician to the Russian Embassy, on mountains near Pekin, and by Dr. Bullock of the English Embassy. Its introduction into cultivation is due to Dr. Bretschneider, who sent seeds to Kew and elsewhere in 1880. Plants raised from these seeds flowered for the first time in Kew in May, 1888. It need not be said of a North Chinese shrub that it is perfectly hardy, and it is as fragrant as the common lilac. The corolla is exceedingly variable in length of tube, which sometimes exceeds half an inch.

Descr. An erect shrub, glabrous except the leaves beneath; branches covered with brown bark; branchlets slender, red-brown. *Leaves* one and a half to two inches long and sometimes nearly as broad, very broadly ovate or elliptic, or almost orbicular, obtuse; base rounded or cuneate, dark green above, subglaucous beneath, and with more or less deciduous villous pubescence towards the base, or quite glabrous; margins towards the base obscurely ciliate; petiole a quarter to one-half of an inch, slender, red-brown. *Thyrses* two to three inches long, erect, sessile, branched at the very base, subcylindric; rachis and branches red-brown; flowers sessile, suberect, pale rose-lilac. *Calyx-lobes* broadly ovate. *Corolla-tube* very variable in length, a quarter to one-half of an inch long, cylindric; lobes oblong, obtuse, margins thick inflexed. *Stamens* small, placed one-third way down the tube. *Ovary* globose; style short, stigma narrowly oblong, notched. *Capsule* half or two-thirds of an inch long, narrowly oblong, obtuse, cylindric.—*J. D. H.*

Fig. 1, Flowers; 2, calyx, style, and stigma; 3, corolla laid open; 4, anther; 5, ovary:—*all more or less enlarged.*

M.S del. F.B. ...ath.

Tab. 7065.

OLEARIA MACRODONTA.

Native of New Zealand.

Nat. Ord. Compositæ.—Tribe Asteroideæ.

Genus Olearia, *Moench*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 276.

Olearia *macrodonta*, arbor parva, ramis patentibus, ramulis paniculis foliisque subtus appresse albo-pubescentibus, foliis petiolatis coriaceis oblongis lineari-oblongisve acutis v. acuminatis grosse dentatis, basi rotundatis, nervis numerosis supra depressis cum costa obtusangulum efficientibus, corymbis terminalibus amplis multi-densifloris, capitulis $\frac{1}{2}$ poll. diam., involucri late campanulati bracteis paucis pubescenti-pilosis, floribus radii 10–30 ligulis oblongis, disci paucis rufescentibus, pappi setis uniseriatis, acheniis pilosis.

O. macrodonta, *Baker in Gard. Chron.* 1884, vol. i. p. 604, and 1886, vol. ii. p. 304, fig. 62.

O. dentata, *Hook. f. in Handbook of New Zeald. Flora*, p. 126.

Eurybia dentata, *var.* α, *Hook. f. Fl. Nov. Zeald.* vol. i. p. 118.

One of the numerous Daisy trees of New Zealand, and perhaps the most conspicuous from the great abundance of its broad white corymbs, which terminate every branchlet, and together cover the plant with a white sheet of flowers. I originally described it in the Flora Novæ Zelandiæ under *Eurybia* (as *E. dentata*), a genus separated by Cassini from *Olearia* by its uniseriate pappus, and retained by De Candolle. A further study of the Australian and New Zealand species of the two genera convinced me that they could not be kept apart, and I united them in the Handbook of the New Zealand Flora, where I inadvertently retained the specific name of *dentata*, overlooking the fact that it was preoccupied for an Australian species. In consequence of this, Mr. Baker, in the "Gardener's Chronicle," changed the name to *O. macrodonta*; but whether this will be maintained is doubtful, for *O. macrodonta* is so closely allied to my *O. ilicifolia*, that further material may prove that they are one and the same species, in which case the latter name will claim precedence. Such are the difficulties as to nomenclature that beset the pioneers of Floras,

which have to be elaborated from the examination of, often solitary, Herbarium specimens.

O. macrodonta differs from *O. ilicifolia* in the larger leaves with rounded bases, which turn a pale buff when dried. Both are natives of the mountainous districts of the Northern Island, where (on the Ruahine range) they were discovered by Colenso; they both extend through the Southern Island to Otago; and both smell faintly of musk. *O. macrodonta* is the larger plant of the two, attaining twenty feet in height and spread of branches, with a trunk thirty inches in diameter: its wood affords a poor veneer.

The specimen here figured was from a plant presented to Kew by W. E. Gumbleton, Esq., of Belgrove, Co. Cork, which flowered on a south wall in June, 1888, where it had stood without protection for three years.

Descr. A tree about twenty feet high, with spreading branches, smelling faintly of musk; branchlets, leaves beneath and corymbs covered with an appressed subsilvery pubescence. *Leaves* alternate, petioled, three to four inches long, coriaceous, oblong or linear-oblong, acute or acuminate, subsinuately sharply deeply toothed; base rounded or cuneate, above dark green (young pubescent), with many impressed nerves that form an obtuse angle with the midrib; petiole one to one and a half inches long, stout, reddish. *Corymbs* six inches and upwards in diameter, profusely branched, more or less flat-topped. *Heads* half an inch in diameter and more; involucre campanulate; bracts few, oblong, subacute, pubescent, greenish with brown tips. *Ray-flowers* ten to thirty, with oblong three-toothed ligules; disk-flowers few, reddish; pappus of one series of rigid scabrid white or reddish hairs. *Achene* cylindric, pubescent.—*J. D. H.*

Fig. 1, Flower of the ray; 2, pappus hair; 3, flower of the disk; 4, stamens; 5, style-arms:—*all enlarged.*

2.
4.
3.
7.

Tab. 7066.

DISA LACERA, *var.* MULTIFIDA.

Native of Cape Town.

Nat. Ord. Orchideæ.—Tribe Ophrydeæ.

Genus Disa, *Berg*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 630.)

Disa (Herschelia) *lacera*; erecta, glabra, foliis radicalibus anguste gramineis scapo flexuoso laxe 2–6-floro brevioribus, vaginis paucis bracteisque late ovatis acuminatis membranaceis, sepalis lateralibus ovato-oblongis subacutis patentibus, dorsali galeato ore orbiculari, calcare brevi conico, petalis columnæ adnatis e basi late auriculata repente angustatis geniculatis apice attenuato spinescente integerrimo, labello ovato-oblongo obtuso plano integerrimo crenato v. fimbriato.

D. lacera, *Swartz in Act Holm.* 1800, p. 212; *Willd. Sp. Pl.* vol. iv. p. 50; *Thunb. Fl. Cap.* p. 12; *Lindl. Gen. & Sp. Orchid.* 354; *Journ. of Horticult.* 1888, p. 221, fig. 24. *Bolus in Journ. Linn. Soc.* vol. xxv. p. 202.

Var. *multifida*; lip fimbriate nearly to the base, *N. E. Brown in Gard. Chron.* 1888, vol. ii. p. 664.

I follow Mr. N. E. Brown in referring this plant to a form of Swartz's *Disa lacera*, because it agrees with the species so named in the Kew Herbarium, and which Lindley has accepted as the type of *D. lacera*, and notwithstanding the discrepancy admitted by Mr. Brown himself, namely, that *D. lacera* is described by Thunberg as a white-flowered plant. Unfortunately, authentic specimens of *D. lacera* are not known to exist; there are none in Swartz's or Thunberg's Herbaria, and Sparrman is cited as the discoverer of the species. Another point in favour of this determination is, that the typical *lacera* is described as having the lip fimbriated at the tip only, and such is the case with some of the specimens in the Kew Herbarium, whilst in others it is fimbriated or crenate all round, and there are all degrees of intermediates in this character. Lindley describes the leaves as rigid and contorted, and the sepals as all terminating in a point (*cum acumine*), neither of which characters are apparent in our cultivated specimens, where the leaves are straight and the dorsal sepal rather obtuse.

The plant here figured was brought to Kew from Cape

Town, by Mr. Watson (Assistant Curator of Kew), and was presented to the Royal Gardens by Professor MacOwan, the Superintendent of the Cape Town Botanical Gardens, with the information that it had quite recently been brought down from Table Mountain. Mr. Bolus, however, who happened to be in England at the time of its flowering, and was engaged on his admirable work on the Orchids of the Cape Peninsula, having examined it, did not recognize it as a plant of that region of South Africa, and suspected that there was some mistake as to its being a Table Mountain plant. Its reference to *D. lacera* would confirm Mr. Bolus' suspicion, for that plant is a native of the Uitenhage and Graham's Town districts, upwards of 300 miles from Cape Town, whence there are excellent specimens in the Kew Herbarium, collected by Mr. MacOwan himself. No doubt it was in that region that Sparrman discovered it, for he travelled into the interior of South Africa in about 1780, after having circumnavigated the globe with Cook on his second voyage.

D. lacera is the first of the section *Herschelia* to be figured in this work. The sectional name is classical; it was proposed as a genus by Lindley, for the beautiful *D. graminifolia*, Ker (a native of Table Mountain), in honour of the distinguished astronomer, Sir John Herschel, who was at that time making his catalogue of the Southern stars at Cape Town, and who was a devoted lover and cultivator of Orchids. Of this *D. graminifolia* (Herschelia cœlestis) Lindley says, "Species haec pulcherrima *colore cœli australis* intense cœruleo superbiens." Mr. Bolus adds to his description of it that it is the commonest species in the Cape Peninsula, and attracts universal observation by its colour and brilliancy, but that, in spite of repeated efforts, it does not appear to have been successfully grown in England.—*J. D. H.*

Fig. 1, Top of ovary, base of lip, petals and column; 2, petals, lip and column; 3 and 4, pollinia:—*all enlarged.*

M.S. del. E. Bates lith.

Tab. 7067.

EUCRYPHIA PINNATIFOLIA.

Native of Chili.

Nat. Ord. Rosaceæ.—Tribe Quillajeæ.

Genus Eucryphia, *Cavanilles*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 615.)

Eucryphia *pinnatifolia*, arbuscula glabra, foliis pinnatis cum impari, foliolis 1–5-jugis sessilibus ovato-lanceolatis acutis crenato-dentatis supra saturate viridibus lucidis subtus pallidis, terminali petiolulato, stipulis oblongo-lanceolatis subacutis deciduis, floribus amplis breviter pedunculatis, sepalis parvis late oblongis, petalis orbiculari-obovatis concavis, staminibus perplurimis disco v. toro tenui insertis, filamentis capillaribus, antheris minutis, ovario pubescente, stylis numerosis filiformibus.

E. pinnatifolia, *Gay Flor. Chil.* vol. i. p. 352, t. 8; *Gard. Chron.* 1880, vol. i. p. 337; *The Garden, Dec.* 1877; *Walp. Ann.* vol. i. p. 113.

Fagus glutinosa, *Pœpp. & Endl. Nov. Gen. & Sp.* vol. ii. p. 68, t. 194.

The genus *Eucryphia*, founded on another Chilian species with simple leaves, has not yet found a generally accepted abiding place in the "Systema Plantarum." Spach placed it in *Hypericineæ;* Endlicher at the end of *Chlænaceæ;* Bentham and Planchon referred it to *Cunoniacæ*, a tribe of *Saxifrageæ;* C. Gay constituted of it a distinct family, *Eucryphieæ;* in the Genera Plantarum I have referred it to *Quillajeæ*, another tribe of *Saxifrageæ*, in which I am followed by Baillon; and finally Maximovicz, in his learned "Adnotationes ad Spiræaceas," inclines to regard it as nearer *Tiliaceæ* and *Elæocarpeæ*. The genus is remarkable as being confined to Tasmania and Chili, and was independently described from the former country by Labillardiere as *Carpodontos*. Only three species of it are known, two simple-leaved ones, and that here figured with pinnated leaves, which is the only one hitherto introduced into Europe.

E. pinnatifolia appears to be a very local plant, being confined, as far as is known, to the Cordillera of Concepcion, where it forms a bushy tree about ten feet high, and is called Nirrhe by the people. It was introduced into

cultivation by Messrs. Veitch and Sons, and seems to be perfectly hardy. The specimen here figured was kindly sent for this work by R. Milne Redhead, Esq., F.L.S. of Holden Clough, Clitheroe (author of a paper on the Botany of Sinai in the Linnæan Journal) in September last, with the observation that the stamens persist after the petals have fallen away, and are in themselves very ornamental.

Descr. A small glabrous tree or large shrub, attaining ten feet in height, much branched; branches and branchlets stout. *Leaves* crowded towards the ends of the branchlets, three to six inches long, pinnate; petiole short and rachis slender; leaflets in one to five pairs; lateral one and a half to two inches long, sessile by a rounded base, oblong-lanceolate, acute, crenate-toothed or -serrate, dark shiny green above, paler beneath; terminal leaflet rather longer, petiolulate; stipules half an inch long, oblong-lanceolate, deciduous. *Flowers* shortly stoutly peduncled, two and a half to three inches in diameter, pure white. Sepals very small, broadly oblong, obtuse, coriaceous, green, deciduous. *Petals* orbicular-obovate, concave. *Stamens* very numerous, inserted in many series on a torus that supports the ovary; filaments capillary, shorter than the petals; anthers very small, orbicular. *Ovary* oblong, pubescent, many-celled; styles very many, filiform, longer than the ovary; stigmas minute. *Capsule* oblong, two-thirds of an inch long.—*J. D. H.*

Figs. 1 and 2, Stamens; 3, disk and ovary; 4, vertical section of ovary:—*all enlarged.*

Tab. 7068.

STAPELIA gigantea.

Native of Zululand and Namaqua Land.

Nat. Ord. Asclepiadeæ.—Tribe Stapelieæ.

Genus Stapelia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 784.)

Stapelia *gigantea*; ramis e caule valido procumbente erectis clavatis 4–8 poll. longis 1–1¼ poll. crassis 4-gonis pubescentibus, angulis compressis dentatis, dentibus brevibus erectis, pedicellis pollicaribus crassis tomentosis, corolla 12–14 poll. diametr., pilis rufis erectis sericeis molliter hirsuta flavida lineolis fusco-rubris creberrime fasciata, laciniis caudato-acuminatis, corona atropurpurea, exterioris squamis lineari-oblongis apice 3-lobis, lobis lateralibus rotundatis intermedio ovato v. calcariforme, interioris segmentis in rostra erecta productis, rostris dorso in alas verticales obtusas integerrimas dilatatis.

S. gigantea, *N. E. Brown in Gard. Chron.* 1877, vol. i. p. 684 and 693, fig. 112, and 1888, vol. ii. p. 728, fig. 101.

This, some Rafflesias and certain species of *Aristolochia* are the largest-flowered members of the vegetable kingdom, and, what is curious, all are most fetid and have lurid colours. They agree in no other characters; they differ altogether in habit and botanical affinity; and they inhabit widely distant parts of the world, namely, South Africa, Malaya, and Brazil.

The Giant Stapelia is a native of Zululand, where it was discovered by Mr. R. W. Plant, a collector, some thirty years ago, and sent by him to the Botanical Gardens of D'Urban, whence it was introduced into England by Mr. Cooper. It has also been collected by Gerrard, and there is a drawing of it in the Kew Herbarium, made by Mr. Sanderson of Natal, and specimens from the Umveloo River; and what is most curious, Mr. Brown informs me that he has received from Professor Macowan, of the Cape Town Botanical Gardens, a living specimen of the same species collected in Namaqua Land, on the opposite side of the African continent. In this respect it is exceptional, for the species of this genus for the most part occupy limited areas; in other words, are as a rule local.

August 1st, 1889.

The specimen here represented was sent by Sir George MacLeay from his rich collection at Pendell Court, where it flowered in October of last year; and is a cutting from the original plant imported by Mr. Cooper. There is a specimen of it in the Royal Gardens, where it has not flowered as yet.

Descr. *Stem* as thick as the thumb, terete; branches erect, pubescent, pale green, four to eight inches long by one to nearly two broad, four-angled, obtuse; angles compressed, rather acute, with small erect teeth, sides between the angles shallowly concave. *Pedicels* very stout, about one inch long, tomentose. *Calyx-lobes* ovate-lanceolate, tomentose. *Corolla* twelve to fourteen inches broad, closely covered with erect soft hyaline hairs that are red brown over the whole surface of the corolla, but white and transparent on the margins of the segments, under surface yellowish mottled with green, upper dull yellowish with close-set short narrow undulate red-brown bars; central area three to three and a half inches in diameter, concave, margins rounded; segments ovate-lanceolate, gradually tapering into long points. *Corona* small, very dark red-purple; outer of five panduriformly-oblong spreading scales three-lobed at the top, the side lobes short rounded, the midlobe produced into a short spur; inner corona of five erect spiniform processes, each produced at the back into a quite entire obtuse wing. —*J. D. H.*

Fig. 1, Corona; 2, scale of outer corona; 3, segment of inner corona; 4 and 5, pollinia with their corpuscles:—*all enlarged.*

Vincent Brooks Day & Son Imp

Tab. 7069.

CATASETUM Garnettianum.

Native of the Amazons River.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Catasetum, *Rich.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 551.)

Catasetum *Garnettianum*; pumilum, pseudobulbis ovoideis demum fusiformibus vaginatis, foliis lanceolatis acuminatis 3-nerviis, racemis erectis paucifloris foliis longioribus, bracteis ovato-lanceolatis ovariis pedicellatis multo brevioribus, perianthio fusco-purpureo albo-fasciato, sepalis oblongo-lanceolatis acutis concavis lateralibus deflexis dorsali petalisque erectis, labello lineari albo dorso medium versus gibboso, marginibus infra medium apiceque truncato ciliis longis crassis patentibus pectinato, columna elongata pallide virescente rubro-punctulata apice incurva.

C. Garnettianum, *Rolfe in Gard. Chron.* 1888, vol. ii. p. 692.

In habit and floral characters this species has, as Mr. Rolfe remarks, strong affinities with *C. barbatum* (*Myanthus barbatus*, Lindl. in Bot. Reg. t. 1778), and especially to its var. *proboscoideum*, Lindl. l. c. 1841, t. 5, f. 3. From both it differs in the much paler flowers with broad bars of brown-purple on the sepals and petals. In the true *barbatum* the scape is red brown, the sepals and petals green spotted with purple, the lip is shorter, of a dirty rose colour, and fringed all round with cilia, and the back of the column is blood-red. In var. *proboscoideum* the petals are also green, spotted and partly barred with purple, the lip longer than the sepals, green, and its margins crinite with long cilia. It is, in fact, almost as different from *barbatum* true as the latter is from *Garnettianum*. Another closely allied species is *C. cornutum*, Lindl. in Bot. Reg. 1840, Misc. No. 182, and 1841, t. 5, f. 2, which with the sepals and petals of var. *proboscoideum* has a short triangular green purple-spotted ovate lip, and the cilia reduced to stout blunt processes. Still another is *lanciferum*, Lindl. l. c. f. 5, which has the sepals and petals of *cornutum*, and a lip approaching in shape to that of *C. Garnettianum*, but green, broader at the base,

and with much longer cilia; Lindley suggests its being a variety of *C. barbatum*. A comparison of these excellent drawings in the Register suggests that *lanciferum*, *barbatum*, and *cornutum* may be local forms of one variable species, and *Garnettianum* another, but very closely allied species, possibly to be connected by intermediates not hitherto known on cultivation. As to their localities, *Garnettianum*, *barbatum*, var. *proboscoideum*, and *lanciferum* are natives of Brazil, the latter from the province of Goyaz, and the variety from Sertao; whereas *C. barbatum* itself and *C. cornutum* are native in Demerara, the latter of the Massarony River, near the Falls of Wapopekai.

More interesting in a scientific point of view than the variations in the perianth of *Cataseta*, is the now well-known sexual dimorphism of almost all the species of the genus. This dimorphism was misinterpreted by Mr. Darwin. The subject has been lately investigated by Mr. Rolfe, Assistant in the Herbarium of the Royal Gardens, and the results have been read before the Linnæan Society, and alluded to in the "Gardener's Chronicle," 1889, i. 407. Mr. Rolfe divides the genus into four sections, of which he has been so good as to give me the hitherto unpublished characters. They are:—

1. *Eucatasetum*. Flowers unisexual. Column of ♂ with a pair of deflexed filaments. Lip of both sexes posticous.

2. *Myanthus*. Flowers unisexual. Column of ♂ as in *Eucatasetum*. Lip of ♂ anticous, of ♀ posticous.

3. *Ecirrhosæ*. Flowers unisexual. Column of male without filaments (♀ flower unknown).

4. *Pseudo-catasetum*. Flowers hermaphrodite.

C. Garnettianum belongs to the second section. The figure of it here given is from a plant presented to the Royal Gardens by P. F. Garnett, Esq., of South Bank, Grassendale, Liverpool, who received it from the Amazons River in North Brazil in 1888. It flowered in a tropical house at Kew in the month of November.—*J. D. H.*

Fig. 1, Lip and column; 2, pollinia:—*both enlarged.*

M.S. del. J.N. Fitch lith.

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Tab. 7070.

GREVILLEA aspleniifolia.

Native of New South Wales.

Nat. Ord. Proteaceæ.—Tribe Grevilleæ.

Genus Grevillea, *Brown ;* (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 180.)

Grevillea (Hebegyne) *aspleniifolia ;* frutex gracilis v. arbuscula, ramulis novellis sericeo-puberulis, foliis elongato-lineari-lanceolatis acutis mucronatisve integerrimis serratis pinnatifidisve, supra glabris penninerviis, subtus albo- v. fulvo-sericeis enerviis costa prominula, racemis 1–2-pollicaribus sessilibus v. pedunculatis terminalibus v. in axillis supremis, floribus secundis breviter pedicellatis rachi perianthioque extus tomentosis, perianthii tubo angusto limbo revoluto subgloboso, toro recto, glandula semi-annulari, ovario subsessili villoso, stylo gracili glabro, stigmate obliquo convexo.

G. aspleniifolia, *Knight on Cult. of Proteæ*, p. 120; *Brown in Trans. Linn. Soc.* vol. x. p. 175; *Prodr.* p. 379; *Meissn. in DC. Prodr.* vol. xiv. p. 376; *Benth. Fl. Austral.* vol. v. p. 435.

G. longifolia, *Brown Prot. Nov.* p. 22; *Meissn. l. c.*

G. Van Houtteana, *Hort.*

It is much to be wished that the cultivation of the more beautiful and singular *Proteaceæ* of the Cape and Australia, which may be said to have been in abeyance for nearly a century, should be resumed. Miller in his "Gardener's Dictionary," Ed. 1770, has only three species. Aiton in the first edition of "Hortus Kewensis" (1789) enumerates sixty-four, and in the second (1811) this is increased to 114. The late J. Smith, who was Curator of the Royal Gardens from 1822 to 1864, states in his interesting "Records of the Royal Botanic Gardens" that of the sixty-four species which are recorded in the first edition of "Hortus Kewensis," forty of that number were in 1823 living in the garden, since which (that is, between 1823 and 1864) the Kew collection had been increased to 154. The number now is short of this (about 120), the Cape species being fewer in number; they are, however, replaced in point of horticultural interest by handsomer Australian species.

Grevillea aspleniifolia is a native of various parts of the colony of New South Wales. The first specimens sent to England were from Caley, who was directed to proceed to

that colony in 1801 by Sir Joseph Banks, as collector for Kew, and who spent ten years there. The name and accompanying description first appear in a work published with the date 1809, entitled "On the Cultivation of Proteæ," by Charles Knight, in which no fewer than 254 species of the Order are described, and, as might be inferred from the title of the work, though it is not so stated, were then in cultivation in England. Knight was a Nurseryman in King's Road, Chelsea, and it is generally admitted that Salisbury was the author of the descriptions, though neither is this stated in the work, which is quoted by Meissner and others as by "Knight and Salisbury." It is presumable that the descriptions published by Knight were drawn up in the Banksian Herbarium from materials prepared by Brown for his "Flora Australiensis," for in Brown's paper "On the Proteaceæ of Jussieu," read before the Linnæan Society in July, 1809, *P. asplenifolia* appears as a species with no citation of other authority, but with the observation that it exists in the Banksian Herbarium; whereas in the "Prodromus Floræ Novæ Hollandiæ," published only a year later, Knight's work is cited as the authority for the name, and Caley as the discoverer of the species. Those who are cognizant of the rivalries of the botanists of the early part of this century, and especially as regards the publication of Australian plants, will draw their own conclusion as to the real authorship of the species.

Descr. A shrub or small tree, twelve to fifteen feet high; branches slender, young minutely silky. *Leaves* four to ten inches, shortly petioled, linear-lanceolate, entire toothed serrate or pinnatifid, glabrous and bright green above; beneath silky, white or fulvous; midrib distinct. *Racemes* one to two inches long, erect, sessile or shortly peduncled, slender, terminal or subterminal, minutely tomentose; flowers secund, shortly pedicelled. *Perianth* one-half to two-thirds of an inch long, silkily pubescent, pale pink streaked with red; tube cylindric; limb revolute, subglobose. *Torus* short, nearly straight; gland small, tumid, semi-annular. *Ovary* shortly stipitate, villous; style long, bright red, stigma oblique.—*J. D. H.*

Fig. 1, Flower; 2, vertical section of perianth; 3, ovary and gland:—*all enlarged.*

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J. S. del. J.N. Fitch lith.

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TAB. 7071.

BERBERIS ANGULOSA.

Native of the Himalaya.

Nat. Ord. BERBERIDEÆ.—Tribe BERBEREÆ.

Genus BERBERIS, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 43.)

BERBERIS *angulosa*; frutex erectus, ramulis erectis virgatis strictis puberulis, spinis 3–5-fidis, foliis deciduis 1–1½-pollicaribus obovatis oblanceolatisve marginibus incrassatis integerrimis v. distanter spinuloso-subserratis, apice rotundatis acutisve muticis v. aristulatis, floribus majusculis solitariis, pedicellis decurvis, sepalis extimis oblongis interioribus æquilongis sed multoties angustioribus, baccis magnis globoso-obovoideis rubris 5–7-spermis, stigmate subsessili pulvinato.

B. angulosa, *Wall. Cat.* 1475 ex parte. *Hook. f. & Thoms. Fl. Indic.*, 227; *Hook. f. Fl. Brit. Ind.* vol. i. p. 111.

Berberis angulosa is a rare Himalayan species, and one of the largest flowered and fruited of the thirteen found in that mountain range; it is also one of the most distinct, though referred by Lindley to the racemose *B. aristata*, which he has by error published as *B. umbellata*, Wall. (Bot. Reg. 1844, t. 44). It was discovered early in the century by Mr. Blinkworth in Kumaon, and gathered later by Wallich in Nepal, and by myself in the adjacent province of Sikkim, at elevations of 11,000 to 13,000 feet. The only evidence of its occurring elsewhere in the Himalaya is the specimen here figured, which was sent in flower to Kew by Thomas Acton, Esq., of Kilmacurragh, Rathdrum, Ireland, in May 1888, and the fruit in October of the same year, with the information that it was raised from seed obtained from Cashmir by his brother, Colonel Ball Acton. In the Kew Herbarium there are specimens raised from seed sent to the Edinburgh Botanical Garden by Mr. Gumbleton in 1885, and others sent to Kew by Mr. Gumbleton himself in 1887.

In Sikkim *B. angulosa* forms a shrub four feet high and more, often accompanying the beautiful little *B. concinna* (Plate 4744). It grows at a greater elevation than any other of the larger shrubby species except *B. macrosepala*

(Plate 4744), and forms a striking object in autumn from the rich golden yellow and red colouring of the foliage. The fruit is eatable, being less acid than in the common species of Europe and Asia.

Descr. An erect bush, four feet high and upwards, with stout angled and grooved erect puberulous branches; spines three- to five-branched, slender. *Leaves* deciduous, fascicled, one to one and a half inches long, sessile or narrowed into a short petiole, obovate or oblanceolate, quite entire or with a few spinous teeth on the thickened margin, tip rounded, apiculate or aristate, thinly coriaceous, often puberulous beneath, opaque above, rather shining beneath, scarlet and yellow in decay. *Peduncles* solitary or fascicled, very rarely two-fld., decurved, about two-thirds of an inch long. *Flower* one-half to two-thirds of an inch in diameter, pale golden yellow. *Outer sepals* narrowly oblong, inner as long but nearly twice as broad; petals obovate, tip rounded, pale yellow. *Berry* two-thirds of an inch long, globosely obovoid, scarlet, five- to six-seeded; style very short or 0, stigma pulvinate.—*J. D. H.*

Fig. 1, Petal; 2, stamen; 3, ovary:—*all enlarged.*

M. S. del, J.N. Fitch lith.

Vincent Brooks Day & Son Imp.

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Tab. 7072.

ANOIGANTHUS breviflorus.

Native of Cape Colony and Natal.

Nat. Ord. Amaryllideæ.—Tribe Amarylleæ.

Genus Anoiganthus, *Baker*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 722.)

Anoiganthus *breviflorus*; bulbo ovoideo tunicis brunneis membranaceis supra collum productis, foliis synanthiis anguste loratis, viridibus erectis glabris, pedunculo tereti, umbellis 2–10-floris pedicellis elongatis, spathæ valvis binis lanceolatis magnis, perianthio luteo, tubo brevi infundibulari segmentis oblongo-lanceolatis ascendentibus tubo 3–4-plo longioribus, staminibus distincte biseriatis filamentis brevibus, fructu oblongo.

A. breviflorus, *Baker in Journ. Bot.* 1878, p. 76; *Handb. Amaryll.* p. 27.

Cyrtanthus breviflorus, *Harv. Thes. Cap.* vol. ii. p. 25, t. 139.

This is a very acceptable addition to our stock of cultivated Cape bulbs. It appears to have been first gathered by Krauss in Natal about 1840, and has since been found to be spread through all the eastern regions of Cape Colony, ascending the mountains to five thousand or six thousand feet. It was first described and figured by Dr. Harvey in 1863. He placed it in the genus *Cyrtanthus*, but it differs widely from the true *Cyrtanthi*, both in its perianth and stamens. Our plants grown at Kew were received from Mr. J. M. Wood, of the Natal Botanic Garden, and from Mr. R. W. Adlam. With us it grows and flowers freely in an open border where it is protected from frost, and has matured a good supply of seed. Our drawing was made from a plant that flowered at Kew last July. I formerly thought that there were two species, but now regard them as extreme forms of one.

Descr. *Bulb* ovoid; outer tunics membranous, brown, produced for some distance above its neck. *Leaves* three or four to a bulb, contemporary with the flowers, narrow loráte, obtuse, a foot or a foot and a half long, half or three-quarters of an inch broad, green, glabrous, channelled down the face. *Peduncle* subterete, half a foot or a foot long. *Flowers* from two to ten in an umbel; pedicels one

or two inches long; spathe-valves two, large, lanceolate. *Ovary* oblong-trigonous, green, with many superposed ovules in each cell. *Perianth* bright yellow, an inch or an inch and a half long; segments oblong-lanceolate, three or four times as long as the funnel-shaped tube. *Stamens* erect, inserted in two distinct rows, one at the throat of the perianth-tube, and the other above the middle of it. *Style* overtopping the anthers, tricuspidate at the tip. *Capsule* oblong, an inch long, loculicidally three-valved down to the base. *Seeds* flat, oblong, black.—*J. G. Baker.*

Fig. 1, A flower, cut open, *life-size;* 2, back view of anther; 3, front view of anther; 4, apex of style, with stigmas :—*all enlarged.*

Tab. 7073.

ARISTOLOCHIA HIANS.

Native of Venezuela.

Nat. Ord. Aristolochiaceæ.—Tribe Aristolochieæ.

Genus Aristolochia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 123.)

Aristolochia (Bilabiatæ) *hians*; glaberrima, caule gracili volubili, foliis reniformibus subtus glaucescentibus, sinu lato profundo, auriculis rotundatis, pseudostipulis sessilibus reniformibus, floribus longe pedunculatis magnis, perianthii utriculo obovoideo-obconico inflato (ventriculiformi) sordide rubro-purpureo basi viridi, nervis viridibus costato, intus infra faucem discis 2 auriculæformibus pubescentibus instructo, tubo brevi intus villoso, labio superiore longissimo inferiore longiore ensiformi recto v. subrecurvo acuminato pallide brunneo costis flavis, superiore longe unguiculato in laminam amplam orbiculatam 2-fidam brunneo irroratam repente ampliato, staminibus 6.

A. hians, *Willd. in Mem. Soc. d. Nat. Mosc.* vol. ii. (1809), p. 100, t. 5; *Duchartre in DC. Prodr.* vol. xv. pt. i. p. 472; *N. E. Brown in Gard. Chron.* 1887, vol. i. p. 40.

Howardia hians, *Klotzsch in Monatsb. Berl. Acad.* 1859, p. 617.

A near ally of *A. brasiliensis*, Mart. and Zucc. (*A. ornithocephala*, Hook. Tab. nostr. 4120), differing chiefly in the much longer upper lip of the perianth; the flowers also are less brightly coloured. It is a native of Venezuela, whence there are specimens in the Kew Herbarium collected near Tovar by Fendler in 1854-5, and by E. Otto in 1859. There is also a specimen from South Brazil collected in St. Catharina by Fritz Mueller, which has by accident been in Martius's Flora Brasiliensis referred to *A. brasiliensis*. It may not be indigenous in S. Brazil. It has been long cultivated in Kew, and flowers in the months of August and September. The flowers emit a strong stench, as is the case with its allies.

Descr. A lofty glabrous twining climber; stems terete. *Leaves* petioled, three to five inches in diameter, rounded-reniform, with a broad deep sinus and rounded auricles, bright green above, pale or subglaucous beneath, and closely reticulated; petiole two to four inches long; stipules one-half to one inch broad, sessile, reniform. *Flowers*

axillary, solitary; peduncle three to five inches long. *Utricle of perianth* the form of the human stomach, two to two and a half inches long, green at the base, dirty purple beyond it with broad dull-green ribs, glandular within on the concave surface, and with two collateral suborbicular auricle-like pubescent disks or calli just within the throat on the opposite side to the glandular; tube short, villous within; upper lip five to eight inches long, sword-shaped, acuminate, slightly recurved, pale brown with broad yellow ribs; lower lip clawed, the claw about one inch long by one-third of an inch broad, linear, keeled by a stout midrib, waved, clouded with brown and yellow, suddenly dilating into a suborbicular two-lobed limb three to four inches in diameter, which is yellowish reticulate with red-brown nerves on the under surface, and brown mottled with darker brown on the upper. *Stamens* six; anthers obtuse. *Capsule* five inches long, clavate, narrowed into a long stipes.—*J. D. H.*

Fig. 1, Ventricle and tube of perianth laid open, showing the glandular surfaces, pubescent disks, and column of stamens; 2, portion of the glandular surface; 3, staminal column:—*all but fig.* 1 *enlarged.*

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Tab. 7074.

EUCALYPTUS stricta.

Native of New South Wales.

Nat. Ord. Myrtaceæ.—Tribe Leptospermeæ.

Genus Eucalyptus, *L'Hér.*; (*Benth. et Hook.f. Gen. Pl.* vol. i. p. 707.)

Eucalyptus (Renantheræ) *stricta*; frutex v. arbor parva, foliis linearibus v. lineari-lanceolatis crassiusculis utrinque nitidis venis obscuris obliquis, pedunculis solitariis brevibus teretiusculis 4–8-floris, floribus parvis breviuscule pedicellatis, alabastris ovoideis, calyce vix $\frac{1}{6}$ poll. diam., operculo tubo breviore depresso-hemispherico v. conico granulato, staminibus calycem subæquantibus alabastro inflexis, antheris minutis globoso-reniformibus, loculis parallelis demum rimis divergentibus dehiscentibus, fructu $\frac{1}{4}$ poll. diam. globoso-truncata lævi, oris margine acuta, valvis capsulæ inclusis.

E. stricta, *Sieber in Spreng. Syst. Cur. Post.*, p. 195; *DC. Prodr.* vol. iii. p. 218; *Benth. Fl. Austral.* vol. iii. p. 217 (*excl. syn.*).

E. virgata, *Sieber l. c.* p. 195; *DC. l. c.* p. 217.

E. cneorifolia, *DC. Mem. Myrt.* t. 9.

E. Luehmaniana, *F. Muell. Fragm. Phyt.* vol. xi. p. 38.

No genus in the vegetable kingdom contains species more variable, or more difficult to define, than *Eucalyptus*, and of this *E. stricta* is a conspicuous example; for amongst the many forms of it preserved in the Herbarium of Kew, and which present leaves varying from linear to elliptic-lanceolate, from two to five inches long, and from a quarter to upwards of half an inch broad, and from obtuse to acute or acuminate, there is none at all resembling that here figured in the slender long pendulous branches and very narrow flexuous leaves. These differences in characters and habit may, however, be attributed to the difference in respect of humidity of the Temperate House at Kew in which the specimen figured was grown, and the comparatively dry climate of New South Wales.

In his most valuable "Eucalyptographia," Baron von Mueller has discussed the intricate synonymy of this variable species, and corrects some of Mr. Bentham's observations, into the details of which it is not necessary to go here. Of these the most important point is that whereas in the Flora Australiensis *E. stricta* is referred to

the section *Micrantheræ*, Mueller places it under his *Renantheræ* characterized by the anthers opening upwards by divergent slits.

The present is the eighth species of the genus figured in the Botanical Magazine, the others being *E. amygdalina*, Lab., t. 3260; *E. coccifera*, Hook. f., t. 4637; *E. cornuta*, Lab., t. 6140; *E. macrocarpa*, Hook., t. 4333; *E. Preissiana*, Schau., t. 4266; *E. pulverulenta*, Sims, t. 2087; and *E. splachnicarpa*, Hook., t. 4036. Of these *E. splachnicarpa* is referable to *E. calophylla*, Br.

Eucalyptus stricta is a not uncommon shrub or small tree in New South Wales, and I gathered it myself on the road from Sydney to Botany Bay in 1841. It occurs from near the coast to an elevation of 4000 feet on the Blue Mountains, occasionally attaining a height of fifty feet in the lower levels, and a diameter of trunk of ten inches; more often, however, it forms a bush or small tree three to twenty feet in height. The Colonial names for it, according to Bentham, are Muzzle-wood and Green-back Gum-tree, but Von Mueller confines the name of Muzzle-wood to *E. stellulata*. The wood makes a good fuel, and the tree yields a good deal of kino, an astringent resin which abounds in other species. The specimen here figured is from a plant about thirty feet high in the Temperate House at Kew, raised from seed probably sent by that indefatigable correspondent of the Gardens, Baron von Mueller.—*J. D. H.*

Fig. 1, Portion of leaf; 2, bud with operculum removed; 3, operculum; 4 and 5, front and back view of stamen; 6, calyx after the fall of the stamen; 7, fruit, from Herbarium specimens:—*all but fig. 7 enlarged.*

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Tab. 7075.

BERBERIS Lycium.

Native of the Western Himalaya.

Nat. Ord. Berberideæ.—Tribe Berbereæ.

Genus Berberis, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 43.)

Berberis *Lycium*; frutex glaberrimus, ramulis gracilibus, spinis 3-fidis, foliis fasciculatis oblanceolatis apiculatis integerrimis rarius spinuloso-dentatis rigidiusculis subtus pallidis glaucis, racemis gracilibus multifloris, floribus gracile pedicellatis, sepalis 3 exterioribus minutis 3 interioribus petalis obovatis dimidio minoribus, baccis ellipsoideis subacutis, stylo brevi gracili, stigmate parvo pulvinato.

B. Lycium, *Royle in Trans. Linn. Soc.* vol. xvii. p. 94, and *Ill. Plant. Himal.* p. 64 (*excl. syn.*); *Flück. & Hanbury Pharmacogr.* p. 34; *Drury Useful Pl. of India*, p. 76; *Brandis For. Fl.* p. 12; *Stewart Panjab Pl.* p. 7; *Hook. f. & Thoms. Fl. Ind.* p. 225; *Hook. f. Fl. Brit. Ind.* vol. i. p. 110.

B. elegans, *Hort.*

B. aurahuacensis, *Hort. Fœbel.*

A very interesting plant, the subject of a learned treatise by the late Dr. Royle, published in the Transactions of the Linnean Society, in which it is shown to be one of the species of Barberry that yields the Indian Lycium of Dioscorides. The latter author mentions two species of Lycium as used for diseases of the eyes, a Grecian and an Indian, of which the latter is the most efficacious; and the key to the identification of the Indian Lycium with the genus Berberis is the fact of Dioscorides giving it the Arabian name of Hooziz, which is the equivalent for the Hindoo Rusot, and this again is the name applied to the various Indian species of *Berberis* which are used in native practice for diseases of the eye.

Referring to its use, Dr. Royle says, "The rusot is at the present day procurable in every bazaar in India, and is used by native practitioners, who are fond of applying it both in incipient and chronic inflammation of the eye, and in the latter state both simply and in combination with opium and alum. It is sometimes prescribed by European practitioners; and I have heard that it was found very efficacious by Mr. M'Dowell in the ophthalmia of soldiers who had returned from the expedition to

Egypt. I have myself occasionally prescribed it, and the native mode of application makes it peculiarly eligible in cases succeeding acute inflammation, when the eye remains much swollen. The extract is by native practitioners in such cases rubbed into a proper consistence with a little water, sometimes with the addition of opium and alum, and applied in a thick layer over the swollen eyelids; the addition of a little oil I have found preferable, as preventing the too rapid desiccation. Patients generally express themselves as experiencing considerable relief from the application." To this may be added that it is a recognized drug of the Official Pharmacopœia of India, and is used by natives in the treatment of fevers of all kinds, diarrhœa, dyspepsia, and general debility.

A most interesting account of the history of the Indian Lycium is contained in the Pharmacographia of Flückiger and Hanbury, where it is stated that it is mentioned by the author of the Periplus, who lived about the first century, as an export from the Indies, and that in the second century a duty was levied on it at the Roman custom house of Alexandria; also that it was preserved in singular little jars which are now to be found in collections of Greek antiquities.

The other species of Indian *Berberis* employed for this purpose are *B. aristata*, *asiatica*, and *nepalensis*, and the drug is an extract of the wood of the stem and root, called in Hindoo medicine *dar-huld*.

Berberis Lycium has a wide range in the Himalaya, from Kumaon westward to Kashmir, at elevations of 3000 to 9000 feet, and has been also found beyond the Indus in the province of Hazara. The fruit, which is of a beautiful purple colour and covered with a delicate bloom, is eatable, and as I have been informed is exported in a dried state. In habit the species resembles *B. vulgaris*, also a Western Himalayan plant, but the leaves are coriaceous, the berries terete, of a very different colour, and the style is quite distinct. The specimen figured is from a plant growing in the arboretum of the Royal Gardens, which flowers in June and fruits in September.—*J. D. H.*

Fig. 1, Flower; 2, petal and stamen; 3, anther dehisced; 4, ovary; 5 seed: —*all enlarged.*

M. & L. E. Bateman del.

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Tab. 7076.

EREMURUS himalaicus.

Native of the Western Himalayas.

Nat. Ord. Liliaceæ.—Tribe Asphodeleæ.

Genus Eremurus, *M. Bieb.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 787.)

Eremurus *himalaicus*; fibris radicalibus carnosis, foliis lanceolatis bipedalibus flaccidis obscure ciliatis, pedunculo stricto foliis duplo longiori, racemo denso 1–2-pedali, pedicellis strictis flore longioribus apice articulatis, bracteis parvis lineari-subulatis, perianthii segmentis oblongis albis distincte fusco-vittatis, genitalibus perianthio æquilongis, seminibus brunneis acute angulatis.

E. himalaicus, *Baker in Journ. Linn. Soc.* vol. xv. p. 283; *Regel Descr.* fasc. ix. p. 30; *Gard. Chron.* N. S. 1881, vol. i. p. 50, fig. 11.

About thirty species of this fine genus are now known, at least twenty of which have been discovered during the last generation in Central Asia. The present is the only species known in the Himalayas, and it is perfectly distinct from *E. Olgæ* of Turkestan, which Dr. Regel has doubted. It is a very striking plant, reaching a height of six or seven feet, with hundreds of pure white flowers, with segments narrowly banded with brown. Although it is widely spread in the Western Himalayas, at a height from seven thousand to ten thousand feet above sea-level, and produces seed freely, it does not appear to have been introduced into cultivation till within the last ten years. It was flowered by the late Rev. H. Harpur Crewe in 1881. Our drawing was made in the herbaceous ground at Kew last June. Mr. W. E. Gumbleton, who has cultivated several of the species in the south-west of Ireland, informs us that this is the first of all of them to come into flower, beginning, with him, at the middle of May.

Descr. *Root-fibres* fleshy, cylindrical, densely fascicled. *Leaves* many in a dense radical rosette, lanceolate, flaccid, obscurely ciliated, reaching a length of two feet or more. *Peduncle* terete, stiffly erect, twice as long as the leaves, bearing only a few empty bracts. *Raceme* dense, one or two feet long, three or four inches in diameter when fully expanded; pedicels ascending or spreading, articulated

at the tip, the lower an inch or more long; bracts small, linear-subulate. Expanded *flower* an inch in diameter; segments oblong, pure white, with a distinct one-nerved keel of brown. *Stamens* as long as the perianth-segments; filaments filiform; anthers small, oblong, yellow. *Ovary* globose; style as long as the stamens. *Capsule* subglobose, half an inch in diameter. *Seeds* brown, acutely angled.—*J. G. Baker.*

Fig. 1, Bract; 2, front view of anther; 3, back view of anther; 4, pistil:—*all enlarged.*

M. S. del. et Lith.

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Tab. 7077.

ARACHNANTHE Clarkei.

Native of the Eastern Himalaya.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Arachnanthe, *Blume*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 572.)

Arachnanthe *Clarkei*; caule subcompresso, foliis loratis apice 2-lobis lobis rotundatis, pedunculo foliis breviore robusto 2–3-flore vaginis appressis, floribus amplis aurantiacis cinnamomeo fasciatis, sepalo dorsali erecto elongato lineari sursum sensim ampliato obtuso, lateralibus petalisque consimilibus sed falcato-decurvis, labelli pallide cinnamomei aurantiaco striati breviter unguiculati lobis lateralibus rotundatis incurvis, terminali subquadrato 3-fido, disco lamellato 7–9-carinato.

A. Clarkei, *Rolfe in Gard. Chron.* 1888, vol. ii. p. 567.

Esmeralda Clarkei, *Reichb. f. in Gard. Chron.* 1886, vol. ii. p. 552.

Vanda Clarkei, *N. E. Br. in Kew Bull.* 1888, p. 112.

The genus *Arachnanthe* was established by Blume in his beautiful work, "Rumphia," where it replaces his older name of *Arachnis*, published in the Bijdragen, which he proposed for the *Epidendrum Flos Aeris* of Linnæus, and to which he gave the name of *Arachnis moschifera*. The latter is a magnificent Orchid supposed to be a native of Japan, being figured in Kœmpfer's Amœnitates (p. 868), but which is more probably only cultivated in that archipelago. It has been collected in Borneo, Java, and in the Malay Peninsula, at Perak, by the collectors sent by Dr. King from the Calcutta Botanical Gardens.

The nearest ally of *A. Clarkei* is *A. Cathcarti* (Benth. in Gen. Plant. iii. 573), the *Vanda Cathcarti*, Hook. f., figured in this work (Tab. 5845), upon which Reichenbach founded the genus *Esmeralda*, distinguishing it from *Vanda* by the lip being articulate with the column and mobile. To this character may be added the flat leaves of a flaccidly coriaceous consistence, and twisted at the base so as to lie all in one place. In the true Vandas the leaves are, when not terete, typically rigidly coriaceous, recurved and keeled. Bentham was the first to reduce *Esmeralda*

to *Arachnanthe*, adding to it *Vanda Lowii* (Tab. 5475) and the genera *Arhynchium*, Lindl. in Paxt. Fl. Gard. vol. i. p. 142 (*Renanthera bilinguis*, Reichb. f. Xen. Orchid. vol. i. p. 88 and 240, t. 4), and *Ammodorum*, Breda (*Aerides Sculingi*, Blume). To these there is to be added a very fine species discovered by the late Dr. Maingay in Malacca, and which I propose to call *A. Maingayi*. It has flowers two inches in diameter, in spreading panicles sometimes three feet long, and broadly obovate lateral sepals; its colours are not recorded, but it is no doubt well worth cultivation.

Arachnanthe Clarkei was discovered by the indefatigable botanist whose labours it commemorates, in the Sikkim Himalaya at an elevation of 6000 feet (not 8000, as stated by Reichenbach). There are two beautiful figures of it made in Sikkim in a collection of Orchid drawings kindly lent by Dr. King, of the Calcutta Botanical Gardens; a third of a flower alone, in the Kew collection of drawings, was made by the late Dr. Jerdon, and marked as from Bhotan and the Khasia Hills (the latter I should think very doubtful); a fourth occurs in a collection of drawings (also belonging to the Calcutta Botanical Gardens) made by the late Mr. Simons in the Bhotan Hills. The specimen figured flowered in the Royal Gardens, Kew, in September of last year, and was received from Mr. Pantling, who collected it in Sikkim.—*J. D. H.*

Fig. 1, Lip; 2, column; 3, anther; 4 and 5, pollinia, with their remarkable strap:—*all enlarged.*

Tab. 7078.

DRACÆNA MARMORATA.

Native of Singapore.

Nat. Ord. Liliaceæ.—Tribe Dracæneæ.

Genus Dracæna, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 779.)

Dracæna *marmorata*; fruticosa, caule elongato simplici, foliis sessilibus lanceolatis magnis confertis recurvatis plicatis albo-marmoratis, floribus in paniculam angustam ramis brevibus ascendentibus dense racemosis dispositis, pedicellis brevibus medio articulatis, bracteis brevibus suborbicularibus, perianthii segmentis tubo cylindrico longioribus, staminibus segmentis æquilongis.

This fine new tropical species of Dracæna was received in a living state at Kew in 1882 from the Botanic Garden of Singapore. It flowered with us for the first time in the early months of 1888. It is allied to *D. arborea*, *Smithii* and *Cantleyi*, the last a new species named after and discovered by the late Mr. Cantley, for some time Curator of the Singapore Garden, which has not yet been introduced into cultivation in Europe. The most striking characteristic of the present plant from a horticultural point of view is its very large sessile plicate bright green leaves, copiously marbled with white. Our drawing was made from the plant that flowered in the Palm House at Kew.

Descr. *Stem* simple, elongated. *Leaves* crowded, sessile, lanceolate, recurved, plicate, bright green, copiously marbled with white, reaching a length of three feet and a breadth of nearly four inches at the middle, with a midrib which is very distinct towards the base but lost towards the tip. *Panicle* narrow, erect, reaching a length of one and a half or two feet, with many short erecto-patent densely racemose branches; pedicels a quarter or a third of an inch long, not more than two in a cluster; bracts small, suborbicular. *Perianth* greenish-white, under an inch long; tube subcylindrical; segments twice as long as

the tube. *Stamens* as long as the perianth-segments, inserted at the throat of the tube. *Style* with ovary finally an inch long; stigma capitate.—*J. G. Baker.*

Fig. 1, An unexpanded flower; 2, perianth cut open, with stamens; 3, flower complete; 4, pistil:—*all enlarged.*

S. del. J. N. Fitch lith.

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Tab. 7079.

A. PRIMULA pusilla.

B. PRIMULA petiolaris, *var.* nana.

Natives of the Himalaya.

Nat. Ord. Primulaceæ.—Tribe Primuleæ.

Genus Primula, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 631.)

A. Primula *pusilla*; parvula, dense cæspitosa, foliis rosulatis patenti-recurvis spathulatis oblanceolatisve obtusis pinnatifido-dentatis dentibus recurvis supra canis subtus puberulis, costa crassa, scapo gracili, floribus capitatis, bracteis ovato-lanceolatis calycibusque æquilongis glanduloso-farinaceis, calyce ad medium 5-fido lobis acutis erectis corollæ tubum brevem æquantibus, corollæ purpureæ lobis patentibus obcordatis fauce dense villosa, staminibus basi tubi insertis, ovario depresso globoso, stylo incluso.

P. pusilla, *Wall. in Roxb. Fl. Ind. Ed. Carey & Wall.* vol. ii. p. 22; *Wall. Cat.* No. 609; *Tent. Fl. Nep.* t. 32; *Hook. f. Fl. Brit. Ind.* vol. iii. p. 492; *Duby in DC. Prodr.* vol. viii. p. 42; *Mem. Prim.* t. 1, f. 2.

P. humilis, *Steud. Nomencl. Ed.* ii. p. 395.

Androsace primuloides, *Don Prodr. Fl. Nep.* p. 81.

A. primulina, *Spreng. Syst. Veg. Cur. post.* p. 56.

A very common plant in moist situations in the Alpine region of the Himalaya, at elevations of 13,000 to 16,000 feet, from the province of Kumaon eastwards to Sikkim, and it no doubt extends thence into Bhotan, and possibly into the Alps of Western China. Forming considerable tufts, its sapphire-blue flowers are very attractive. Unlike so many of its congeners, it is remarkable for its never varying from the type here figured throughout its wide range of distribution; and may always be distinguished from its many dwarf Himalayan allies by the thick ring of woolly hairs at the mouth of the corolla-tube. The plant figured was raised at Kew from seeds sent by the Director of the Royal Botanical Garden, Calcutta, in 1886, and it flowered in May, 1888. It may be well to mention that it must not be confounded with the North American *P. pusilla* of Goldie (Tab. nost. 3620), published a very few years earlier than Wallich's *pusilla*, and which is

rightly referred to the earlier published *P. mistassinica*, Mich. (Tab. nost. 2973), itself placed by many authors under the widely distributed *P. farinosa*, L.—*J. D. H.*

B. P. PETIOLARIS; glabra v. puberula interdum farinosa, foliis dense rosulatis membranaceis polymorphis erosis dentatis crenulatisve sessilibus v. petiolatis, floribus longiuscule pedicellatis sessilibus v. in scapum umbellatis, calycis dentibus acutis, corollæ albæ roseæ v. pallide purpureæ tubo infundibulari calyce longiore, ore obscure annulato, limbi plani lobis obcordatis rotundatisve emarginatis 2-fidis crenatis dentatisve, ovario globoso acuto, capsula globosa calycis tubo dilatato immersa, seminibus majusculis subglobosis atris papillosis.

P. petiolaris, *Wall. in Roxb. Fl. Ind. Ed. Carey & Wall.* vol. ii. p. 22; *Tent. Fl. Nepal.* t. 31; *Cat.* No. 603; *Duby in DC. Prodr.* vol. viii. p. 37; *Hook. f. Fl. Brit. Ind.* vol. iii. p. 493. P. tridentata, *Don Prodr. Fl. Nep.* p. 77. P. sessilis, *Royle mss.*

VAR. nana, *Hook. f. l. c.*; foliis sessilibus v. breviter petiolatis obovato-oblongis v. spathulatis, scapo 0 v. brevissimo, corollæ lobis obcordatis integris v. dentatis.

P. nana, *Wall. l. c.* p. 23; *Cat.* No. 212. ? Primula, *Griff. Ic. Plant. Asiat.* t. 485, f. 2.

One of the commonest and most variable Primroses in India, or perhaps in the world, abounding under innumerable forms throughout the Himalaya, at elevations of 8000 to 14,000 feet from Garwhal to Bhotan; varying from a dwarf alpine no bigger than a penny piece with sessile leaves and flowers, to a coarse herb with long-petioled spathulate obovate or orbicular-cordate leaves a span long, and umbelled flowers on a stout scape; add to this that some forms are glabrous, others have the young parts clothed with bright sulphur-coloured meal, and that the corolla varies in length of tube from one-sixth to two-thirds of an inch, and its limb from one-third to one and a half inch broad, with lobes entire crenate toothed and even lacerate. The variety here figured is referable to the form I have called *nana*, in which, however, the corolla-lobes are more often deeply toothed; it is found throughout the range of the species at elevations of 10,000 to 14,000 feet, and flowers in spring. The Royal Gardens are indebted to Professor Michael Foster, F.R.S., for plants of var. *nana*, which flowered in April of the present year.—*J. D. H.*

Fig. A. P. PUSILLA. Fig. 1, leaf under-surface; 2, flower; 3, calyx and bract; 4, corolla laid open; 5, ovary :—*all enlarged.*

Fig. B. P. PETIOLARIS, *var.* nana. Fig. 1, bracts and pedicels; 2, calyx; 3, corolla laid open; 4, ovary :—*all enlarged.*

M.S. del, J.N. Fitch lith.

Vincent Brooks, Day & Son Imp.

TAB. 7080.

FRITILLARIA BUCHARICA.

Native of Central Asia.

Nat. Ord. LILIACEÆ.—Tribe TULIPEÆ.

Genus FRITILLARIA, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 817.)

FRITILLARIA (*Rhinopetalum*) *bucharica*; bulbo globoso squamis paucis carnosis ovatis, caule tereti ad apicem foliato, foliis pluribus sessilibus lanceolatis alternis, racemo laxo plurifloro, pedicellis ascendentibus flore subæquilongis, bracteis magnis foliaceis linearibus vel lanceolatis, perianthio campanulato albo-viridulo segmentis oblongis, nectario basali magno lineari viridulo, staminibus perianthio duplo brevioribus, antheris oblongis, filamentis puberulis, ovario apice 6-cornuto, stylo cylindrico ovario æquilongo, stigmate capitato.

F. bucharica, *Regel Descr. Plant. Nov. fasc.* ix. t. 3; *Gartenfl.* vol. xxxiii. p. 321, t. 1171.

This is another of the many interesting hardy bulbous plants which have been brought into cultivation by the recent Russian explorers in Central Asia. It was discovered by Albert Regel in Eastern Bokhara, at elevations of 4000 to 6000 feet, and belongs to the small sub-genus *Rhinopetalum*, which is distinguished from the true Fritillaries by its pale untessellated flowers, entire style, and deeply impressed nectarial foveoles, which sometimes project on the back of the segments of the perianth, so as to resemble a rudimentary horn. The other species of the same subgenus are *F. Karelini* (Plate 6406) and *F. Sewerzowi* (Plate 6371). Our drawing was made from a plant which was flowered by Mr. Elwes at Cirencester last April.

DESCR. *Bulb* globose, formed of several fleshy ovate white scales. *Stem* terete, about a foot long. *Leaves* many, sessile, alternate, lanceolate, three or four inches long. *Inflorescence* a lax many-flowered raceme; pedicels ascending, about as long as the flowers; bracts large, foliaceous, linear or lanceolate. *Perianth* greenish-white, campanulate, under an inch long, not at all tessellated; segments oblong, with a large deeply impressed greenish linear nectarial foveole. *Stamens* half as long as the

perianth; anthers oblong; filaments pubescent. *Ovary* with six horns at the apex; style entire, subulate, as long as the ovary; stigma capitate.—*J. G. Baker.*

Fig. 1, Perianth-segment, viewed from inside; 2, front view of stamen; 3, back view of stamen; 4, pistil complete:—*all more or less enlarged.*

M. S. del. J. N. Fitch. lith.

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TAB. 7081.

IRIS PARADOXA.

Native of the Caucasus and Northern Persia.

Nat. Ord. IRIDEÆ.—Tribe MORÆEÆ.

Genus IRIS, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 686.)

IRIS (*Oncocyclus*) *paradoxa*; rhizomate breviter repente, foliis linearibus glaucis confertis, caule monocephalo foliis breviori, spathæ valvis membranaceis, perianthii tubo brevi, segmentis exterioribus patulis, limbo brevissimo, ungue diffuse barbato, segmentis interioribus magnis erectis obovatis breviter unguiculatis, styli ramis dorso convexis cristis apicalibus parvis deltoideis, antheris linearibus filamentis longioribus.

I. paradoxa. *Steven in Mem. Soc. Natur. Mosc.* vol. v. p. 355; *M. Bieb. Fl. Taur. Cauc.* vol. iii. p. 41; *Ledeb. Fl. Ross.* vol. iv. p. 105; *Regel Gartenfl.* t. 386, fi. 3; *in Trans. Hort. Soc. Russ.* 1863, t. 42, fig. 3; *The Garden*, vol. xxxii. p. 584, *cum Ic.*; *Baker in Journ. Linn. Soc.* vol. xvi. p. 142.

This very curious Iris has long been known in cultivation, but is still very rare. It closely resembles its better known neighbour *Iris iberica* (Bot. Mag. tab. 5847) in habit, leaves, and the inner segments of the perianth, which in both species vary in colour from white to lilac; but the outer segments of the perianth are quite peculiar and different from that of any other Iris in being reduced to a mere tip and narrow margin to the diffusely-bearded claw. All the species of the sub-genus *Oncocyclus* are restricted to the arid regions of Western Asia, one or other of them extending all the way from the borders of Egypt northward to the Caucasus. Our drawing was made from a plant flowered by Mr. R. I. Lynch at the Cambridge Botanical Gardens last May. It also flowered at Kew at about the same time.

DESCR. *Rootstock* short. Produced *leaves* four or five, crowded at the base of the flowering stem, linear, glaucous, at most half a foot long. *Flowering stem* one-headed, terete, shorter than the leaves. *Spathe-valves* large, ventricose, oblong, greenish-white, withered at the

tip at the flowering time. *Pedicel* and *perianth-tube* short; ovary cylindrical; outer segments of the perianth spreading horizontally, about an inch long, copiously veined with brownish-black on a pale brown groundwork, reduced to a mere tip and margin to the diffusely-bearded claw; inner segments of the perianth erect, large, lilac or white, obovate, narrowed suddenly to a short claw. *Style-branches* very convex on the back; apical crests small, deltoid. *Anthers* linear, longer than the filaments.—*J. G. Baker.*

Fig. 1, Front view of stamen; 2, back view of stamen; 3, apex of style-arm, with stigma and crests:—*all enlarged.*

M. S. del, J.N. Fitch, lith.

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Tab. 7082.

SHORTIA galacifolia.

Native of Carolina.

Nat. Ord. Diapensiaceæ.—Tribe Galacineæ.

Genus Shortia, *Torr. & Gr.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 620.)

Shortia *galacifolia*; glaberrima, cæspitosa, foliis longe petiolatis orbicularibus v. basi subcordatis repando-denticulatis lucidis, scapis perplurimis foliis longioribus supra medium vaginatis rubris 1-floris, floribus nutantibus 1–2-bracteatis, bracteis calycibusque rubris, sepalis oblongis obtusis erectis, corolla infundibulari-campanulata alba, lobis ovato-oblongis grosse crenatis, filamentis crassis tubo corollæ adnatis apicibus liberis, antheris incurvis horizontalibus, connectivo lato crasso, loculis marginalibus angustis, staminodiis basin fere tubi corollæ insertis ovatis inflexis villosis, ovario glaberrimo, stylo recto persistente, stigmate minuto 3-lobo

S. galacifolia, *Torr. & Gr. in Amer. Journ. Sc.* vol. xliii. p. 48; *Ser.* ii. vol. xlv. p. 402; *Ser.* iii. vol. xvi. p. 483; *Gray in Proc. Amer. Acad.* vol. viii. p. 246; *in Ann. Sc. Nat. Ser.* vi. vol. vii. p. 171, t. 15; *Synopt. Flor. N. Am.* vol. ii. pt. i. pp. 53 and 399; *Sprague & Goodale, Wild Fl. of N. Am.* p. 107, t. 24; *Masters in Gard. Chron.* 1881, vol. i. p. 596, fig. 109; *Sargent in Garden and Forest*, 1888, p. 506, fig. 80.

One of the most interesting of North American plantss on account of its history, its great rarity, and of the geographical distribution of the genus to which it belongs, which consists of only two species, the present and an almost undistinguishable congener, a native of Japan. *Shortia* is thus one of the most striking proofs of that kinship of the Floras of Eastern Temperate Asia and Eastern North America, to the exclusion of Western America, through the study of which Asa Gray has thrown so much light on the past history of the vegetation of the northern hemisphere.

The following history of *Shortia galacifolia* is from the pen of Professor Sargent, as published in the Garden and Forest. "The great interest of *Shortia* is found in the history of this plant during the past century, and in the fact that of all the plants studied and described and classified by Asa Gray, this little herb most excited his interest. . . . Professor Gray was in Europe in 1839, and when examining the Herbarium of the elder Michaux,

preserved in the Museum at Paris, he found an unnamed specimen of a plant, with the habit of a *Pyrola* and the foliage of *Galax*, of which only the leaves and a single fruit were preserved, and which had been collected, the label stated, in the *Hautes Montagnes de Carolinie*. This specimen at once arrested his attention, and after his return two years later from his first botanical journey in the Carolina Mountains, where he had searched in vain for Michaux's plant, he ventured to describe it, and to point out its probable affinities, dedicating it to Dr. C. W. Short, the author of a Catalogue of the plants of Kentucky."

"Nothing more was seen of *Shortia* for a long time, although no botanists ever visited the mountains of Carolina, and the number in 1866 was considerable, without carrying a special commission from Cambridge to bring back a specimen of Michaux's little plant, in which Dr. Gray's interest became stronger than ever, when, studying in 1858 a collection of Maximovicz's Japan plants, he recognized in that botanist's *Schizocodon uniflorus* another species of *Shortia*, almost identical with the Carolina plant. These specimens, while they confirmed the validity of the genus, threw no further light on the Carolina plant, which botanists now hunted for more assiduously than ever in all the region in which Michaux was supposed to have travelled."

In fine, "the search was given up as almost hopeless, when, in May 1887, *Shortia* was found accidentally by a youth upon the banks of the Catawba river, near the town of Marion, in McDowell County, N. Carolina, at a considerable distance from the high mountains to which Michaux's label assigned the plant."

Professor Sargent then proceeds to give an account of his own re-discovery of *Shortia* in Michaux's original habitat, to which he was led for the purpose of gaining some insight into the origin of Michaux's *Magnolia cordata*. It was during a journey of Michaux's to get roots of this latter plant that he visited the head waters of the Keowee, and, though weakened by sickness and hunger, he proceeded to explore the mountains. On the day of his arrival he discovered what he called a *nouvel arbuste a. f. dentelés rampant sur la Montagne*. Reading Michaux's mss. Journal preserved in the Library of the American

Philosophical Society, this note of Michaux's interested Professor Sargent, and he determined to hunt for the *arbuste* as well as for the *Magnolia*, little suspecting what the former would prove to be. After finding the spot where Michaux had camped in December, 1788, and following a path that the old traveller must have traversed just 100 years before, he discovered the *arbuste* with denticulate leaves, and this to be no other than *Shortia galacifolia*.

Soon after the re-discovery of *Shortia* by Mr. Hyam, it was widely distributed in America; for, as Professor Sargent tells us, "that enterprising young man reaped a rich harvest during a year or two by selling plants (and it is to be feared by exterminating them) at extravagant prices." The credit of flowering it for the first time in England is due to our indefatigable correspondent, Mr. Elwes, who received plants of it from Professor Sargent, and to whom the Royal Gardens are indebted for that here figured, which was exhibited at the Royal Horticultural Society's Exhibition in the spring of this year. Plants of it have also flowered at Kew, received from Mr. F. L. Temple, of Shady-hill Nurseries, Cambridge, U.S.A.

As an object of garden culture *Shortia* will no doubt prove a favourite, for it appears to be easily grown and readily propagated. A specimen kindly given to me by Mr. Elwes early in this year was planted under a clump of Scotch firs in a peaty soil near Sunningdale, and has thriven luxuriantly, side by side with *Linnæa borealis* and *Trientalis europæa*. The flowers have been described as rose-coloured, but they are correctly figured as pure white in Sprague and Goodale's "Wild Flowers of North America;" and so they are in the specimens that have flowered in England. The leaves turn a deep port-wine red in autumn, and nothing can exceed the charm of the abundant drooping snowdrop-like flowers on red scapes as they appear amongst the deep green shining spring foliage.—*J. D. H.*

Fig. 1, Calyx; 2, corolla laid open; 3, staminode; 4, stamen; 5, ovary; 6, transverse section of do.:—*all enlarged.*

Tab. 7083.

CARLUDOVICA rotundifolia.

Native of Costa Rica.

Nat. Ord. Cyclanthaceæ.—Tribe Carludoviceæ.

Genus Carludovica, *Ruiz & Pav.*; (*Benth. et Hook.f. Gen. Pl.* vol. iii. p. 953.)

Carludovica *rotundifolia*; foliorum lamina 4 ped. diametr. semi-orbiculari basi cordata fere 3-partita v. segmento medio fisso 4-partita, segmentis multifidis, petiolo 6–8-pedali tenuiter furfuraceo, scapo pedali, spadice 8 poll. longo cylindraceo, fl. masc. compresso cuneato, staminibus innumeris, fl. fœm. perianthii minuti segmentis ovatis apiculatis, staminodiis longissimis gracillimis tortis, stylis depresso-globosis radiantibus, stigmatibus pulvinatis, syncarpio 6–8 pollicari decurvo cylindraceo.

C. rotundifolia, *Wendland mss.*

This noble species is nearly allied to the well-known *C. palmata* (of the leaves of which Panama hats are manufactured), from which it differs in its much larger size, the leaf being at least four feet broad, and the petiole six to nine feet high, as against a leaf hardly three feet broad, and a petiole four feet high in *C. palmata;* moreover, the latter again, which is smooth, glossy, and little over one-third of an inch in diameter in *C. palmata*, is in this nearly two-thirds of an inch in diameter, and of a dull green, opaque, and covered with a very thin coat of furfuraceous pubescence that is very fugacious. Traces of a similar pubescence are to be found out at the top of the very young petiole of *C. palmata*. Then again the spadix, which in the last-named species is only four inches long, in this is eight inches with a scape nearly an inch in diameter. Lastly, the staminodes of *C. palmata* are very stout, and only one inch long, whereas those of the present species are filiform, and at least six inches long.

In the above comparison I have relied for the characters of *C. palmata* upon the beautiful figures and description given by Drude in Martiu's Flora of Brazil, Cyclanth. p. 234, t. 54 and 55, fig. 2. The name *palmata* is, however, probably very loosely applied, and to more than one species of *Carludovica*, for specimens so named, received from the Botanical Gardens of Jamaica, are undoubtedly *C. rotundifolia.*

November 1st, 1889.

C. rotundifolia was received by the Royal Gardens from Dr. Wendland, Director of the Herrenhausen Gardens, which are perhaps the richest in Europe in *Cyclanthaceæ* and Palms. It is a native of Costa Rica, and flowered in the Palm House at Kew for the first time in 1876.

Descr. *Leaves* very many from the root; petiole eight to nine feet high and two-thirds of an inch in diameter, nearly terete, dark green clothed with a minute furfuraceous evanescent pubescence; blade of leaf four feet and upwards in diameter, half-orbicular, base cordate, three-partite or through the fission of the middle segment four-partite; segments broadly cuneate, margin multifid, the lobules one inch in diameter, acuminate, bright and shiny green above, three-nerved and opaque beneath, the lateral nerves towards the outer margin of the middle segment. *Scape* about a foot high, strict, erect in flower, nearly one inch in diameter. *Spadix* eight inches long, densely clothed with interlaced tortuous very slender staminodes six to eight inches long. *Male flowers* about half an inch long, broadly cuneiform, compressed; perianth segments many, very minute, ovate, apiculate; stamens minute, erect, crowded; filaments very short; anthers linear-oblong. *Fem. flowers* confluent; perianth segments four, minute, ovate, apiculate. *Styles* four, depressed, obliquely and gibbously globose or ovoid, each crowned with a pulvinate stigma. *Fruiting spadix* seven inches long by one and a half broad, decurved, terete, tessellate, greenish-brown without, bright orange-red within; fruits cohering in a mass which breaks away from the scarlet pitted axis, exposing the ripe carpels in a fleshy bright orange-red mass. —*J. D. H.*

Fig. 1, Male flower; 2, perianth segments of male; 3 and 4, anthers; 5, fem. flower with one staminode; 6, the same more advanced and the staminodes cut away:—*all enlarged.*

M.S. del, J.N. Fitch, lith.

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Tab. 7084.

IRIS Bakeriana.

Native of Armenia.

Nat. Ord. Irideæ.—Tribe Moræeæ.

Genus Iris, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 686.)

Iris (Xiphion) *Bakeriana*; bulbo ovoideo tunicis fibroso-reticulatis, foliis 3–4 subulatis mucronatis cavis glaucescentibus conspicue 8-costatis vaginâ membranacea communi vestitis, floribus solitariis subsessilibus, spathis elongatis cylindricis, valvis lanceolatis apice membranaceis, perianthii tubo elongato exserto, segmentis exterioribus lamina ovata reflexa sursum et margine saturate violacea deorsum pallida punctis parvis violaceis decorata et lineâ lutea carinata ungue ascendente triplo breviori, segmentis interioribus oblanceolatis lilacinis, styli cristis magnis subquadratis.

This beautiful new species is a native of Armenia, and for its discovery we are indebted to the Rev. G. F. Gates, of the American Mission. It flowers in February and March, and some, if not all the blooms are strongly and delightfully fragrant, with the odour of violets. It comes very near *I. reticulata*, but the cylindrical, not tetragonal, leaves clearly differentiate it as a distinct species. As minor differences may be noted the absence of any marked crest or ridge on the fall, the more ovate and more pointed blade of the fall and the flange at its base. The colouration, though approached by that of the variety of *reticulata* known as *cyanea*, is very distinct. I am convinced that when it becomes well known it will prove a great favourite. This and the fact of morphological interest, that though so closely allied to *reticulata*, it differs in not possessing what we were led to regard as a fundamental character of *reticulata*, the tetragonal leaves, have led me to name it after one who has done so much to advance our knowledge of Iris, my friend, Mr. J. G. Baker. The drawing was made from plants that flowered at Shelford in February and March.

Descr. *Bulb* small, ovoid, the outer coats formed of strong parallel fibres connected by short oblique meshes.

Leaves three or four to a bulb, subulate, hollow, furnished with eight conspicuous ridges in long spirals, glaucous green, a fifth of an inch in diameter, six or nine inches long at the flowering time, finally a foot or more long, furnished as in *I. reticulata* with a horny tip, and the whole invested at the base with a membranous sheath. *Flower* single, with only a short peduncle buried during flowering but subsequently raising the ripe capsule to the surface of the soil; spathe cylindrical; valves unequal, lanceolate, greenish by reason of their conspicuous green veins. *Perianth-tube* about three inches long, exserted a little from the spathe. Outer segments with a long obovate-elliptical claw, separated by a constriction from the small reflexed ovate blade. The blade is in the upper half and on its edges an intense pure violet in the lower part is marked with small violet spots on a creamy-white ground, and is furnished with an inconspicuous yellow streak not raised into a ridge; the latter is prolonged down the claw; this latter is marked by oblique parallel lilac streaks on a pale ground. Inner segments rather shorter, erect, oblanceolate, plain lilac. *Style-branches* an inch long; crests large, subquadrate, lilac. *Anthers* violet, equal in length to the filaments; pollen yellow.—*M. Foster.*

Fig. 1. Section of the leaf; 2, face of anther; 3, back of anther; 4, branch of style:—*all enlarged.*

characters being its habit, many-flowered spike, and sometimes longer stipes of the pollen, no notice being taken of the position of the lip.

In the endeavour to settle this question of the generic validity of *Xylobium*, I have relied chiefly on the species figured in this Magazine and other illustrated works, for to make an exhaustive examination of the sixteen species described under *Xylobium*, and the hundred under *Maxillaria*, could not under the circumstances be undertaken. The result is, that the plicate leaves, superior lip, and spicate flowers of the former genus are its absolute characters as distinguishing it from *Maxillaria*, for I find no difference whatever in their pollen-masses, which in species of both genera may consist of two pairs, or of one pair only by the coherence or confluence of those of each pair; and the pollinia are sessile on the scale in most species.

With regard to *Bifrenaria*, it differs from *Xylobium*, in so far as I have examined materials, in its few-flowered scape, inferior lip, and usually two stipitate pollinia.

Xylobium leontoglossum has a wide range in South America. It was discovered by Mathews, in Peru, upwards of half a century ago, and has been collected in various parts of New Grenada, from St. Martha and Ocaña southwards, and in Equador, by subsequent travellers. It has been imported on several occasions.

The Royal Gardens are indebted to Messrs. Sander for the plant from which the accompanying figure was taken, and which flowered in March of the present year. The species varies greatly in the length and breadth of the leaves, which sometimes attain nearly three feet in length and four to five in breadth.—*J. D. H.*

Fig. 1, Column and lip; 2, lip; 3, column; 4, anther; 5 and 6, pollen:—*all enlarged.*

M.S. del, J.N. Fitch, lith

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Tab. 7086.

PHAJUS pauciflorus.

Native of Java.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Phajus, *Lour.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 512.)

Phajus (Limatodes) *pauciflorus;* caule gracili erecto basi demum pseudobulboso inferne vaginato apicem versus foliato, foliis elliptico-lanceolatis attenuato-acuminatis plicatis 7–9-nerviis, vaginis valide costatis, racemis caulinis brevibus paucifloris breviter pedunculatis, bracteis oblongo-lanceolatis ovariis brevioribus, floribus nutantibus pallide stramineis, sepalis conniventibus ovato-lanceolatis acutis, petalis elliptico-oblongis acutis apicibus recurvis, labello panduriformi marginibus inferne recurvis columnam non amplectantibus, apice rotundato apiculato v. 3-dentato, basin versus rubro striato, calcare ovario æquilongo incurvo, rostello subelongato.

P. pauciflorus, *Blume Orchid. Archipel. Ind.* p. 11, t. 4 A, B, and t. 11 A; *Mus. Bot. Lugd. Bat.* vol. ii. p. 181.

Limatodes pauciflora, *Blume Bijd.* 375, fig. lxii.; *Lindl. Gen. & Sp. Orchid* 253; *in Paxt. Fl. Gard.* t. 81; *Fol. Orchid.* Limatodes, p. 1; *Walp. Ann.* vol. vi. p. 921.

L. punctata, *Lindl. Fol. Orchid.* Limatodes.

Phajus pauciflorus belongs to a section of the genus with small flowers which are produced upon the stem, and not amongst the leaves or on tall scapes from the base of the old pseudobulbs as in others of this genus. In this respect, as also in the form of the lip, it approaches those Indian species of *Calanthe* in which the lip is at the base of the column, and which render it very difficult to give technical characters for the separation of the two genera. Lindley indeed, while retaining *P. pauciflorus* in *Phajus*, redescribed it as a *Limatodes* under the name of *L. punctatus*. Blume, who established the genus *Limatodes*, subsequently reduced it to a section of *Phajus*, in which he is followed by Bentham in the Genera Plantarum, distinguishing it by the lateral racemes, broad column, and elongate rostellum. The very narrow side lobes of the lip, which do not either in *Phajus* proper or *Limatodes* embrace the column, is almost peculiar in this species.

The remarkable difference in habit and perianth dis-

played by plants admittedly belonging to *Phajus* is well illustrated by the specimens figured in this work. (1) The typical species with scapes from the rhizome, spreading sepals and petals, and the lip embraced by the column, include *P. grandifolius* (*Bletia Tankervilliæ*, Plate 1924; *P. bicolor*, Plate 4078, and *P. Wallichii*, Plate 7023; (2) The species with the habit of growth of (1), but the perianth connivent, *P. maculatus*, Plate 3960 (which is also *Bletia Woodfordii*, Plate 2719), and *P. Blumei*, var. *Bernaysii*, Plate 6032; (3) Species with leafy stems and terminal racemes, *P. albus* (Plate 3991). (4) Species with lateral racemes, a closed perianth, the column hardly embraced by the lip and the rostellum elongate, to which belong *P. pauciflorus* and *P. crispus*, Blume, both Javanese. To these two last alone the sectional name of *Limatodes* applies, for *Limatodes rosea*, Plate 5312, and *L. gracilis*, Plate 4714, are both true species of *Calanthe*, having the very short column of that genus, which alone distinguishes it from *Phajus*.

P. pauciflorus is a native of Java. The specimen here figured was received from the Gardens of Buitenzong in 1887, and flowered in the Royal Gardens, Kew, in May of the present year.—*J. D. H.*

Fig. 1, Lip and column; 2, column and anther; 3, anther viewed in front; 4, pollinia:—*all enlarged.*

Tab. 7087.

GERBERA Jamesoni.

Native of the Transvaal.

Nat. Ord. Compositæ.—Tribe Mutisiaceæ.

Genus Gerbera, *Gronov.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 497.)

Gerbera *Jamesoni*; niveo-tomentosa, foliis longe petiolatis ambiter obovatis runcinato-pinnatifidis, lobo terminali late ovato subacuto marginibus undulatis et grosse irregulariter angulato-lobulatis, lateralibus cuneato-obovatis sinubus rotundatis; scapo nudo valido foliis longiore, capitulo amplo, involucri campanulati lanati bracteis lanceolatis appressis acuminatis, floribus radii 20–30 uniseriatis, ligulis elongatis angustis apice 3-denticulatis, floribus disci ligulis brevissimis recurvis, achæniis erostratis teretiusculis puberulis, pappi setis scabrellis.

C. Jamesoni, *Bolus mss.*—*Gard. Chron.* 1889, i. 772, fig. 122.

A very handsome plant, which, if it will resist the untimely frosts of our uncertain climate, will prove a great addition to the herbaceous garden. It belongs to a genus of about twenty species, of which I believe none have been in cultivation till now; though most of them inhabit South Africa, but a few are natives of North India and of Central and Eastern Asia. The present species was discovered in the Transvaal by the collector Rehman, about 1878, and subsequently by Mr. Jameson in the gold-field districts of Barbertown. It has also been collected by Mr. Wood, of the Natal Botanical Gardens, and by W. Nelson, on the Latrobe river. Its habit is bold, the petioles being erect, and the leaf-blade spreading, whilst the stout scape bearing a very large head with brilliantly coloured rays rises far above the crown foliage. The name *Jamesoni* is proposed for this beautiful species by Mr. Bolus, F.L.S., who has sent to Kew excellent specimens collected by himself. The colour of the rays must be much brighter in its native country than here, for that gentleman describes them as flame-coloured. The specimen here figured was sent by Mr. Wood, of the Natal Botanical Gardens, in 1888, and flowered in spring of the present year.

November 1st, 1889.

Descr. All parts covered with soft hairs, and the mature leaves clothed beneath with a show-white tomentum. *Leaves* numerous from the perennial rootstock, petiole six to eight inches, tall, erect; blade five to ten inches long by two to three broad, runcinately pinnatifid with the margins of the lobes undulate and cut into unequally sinuately toothed obtuse or acute lobules. *Scapes* ten to eighteen inches long, stout, naked. *Head* solitary, suberect, three to four inches broad across the rays. *Involucre* three-quarters of an inch long, campanulate, woolly, base intruded; bracts lanceolate, appressed. *Flowers* of the ray in one series, about thirty, narrowly ligulate, three-toothed, dull yellow beneath, bright orange or flame-coloured above; tube very short; bipartite inner lobe very small, revolute. *Flowers* of the small disk minute, with very short segments. *Achenes* of the ray and disc similar, terete (when young) and puberulous; pappus rather short, very minutely scaberulous, white.—*J. D. H.*

Fig. 1, Ray flower; 2, disk flower; 3, hair of pappus; 4, stamens; 5, style and stigmas:—*all enlarged.*

3
2

TAB. 7088.

THRINAX EXCELSA.

Native of Jamaica.

Nat. Ord. PALMEÆ.—Tribe CORYPHEÆ.

Genus THRINAX, *Linn. f.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 930.)

THRINAX *excelsa;* caudice elato creberrime annulato, petiolo 5–7-pedali, vagina tomento floccoso fulvo densissime lanata, lamina orbiculari 6-ped. diametro ad tertiam partem multifida subtus obscure argentata, laciniis 40–50 ad basin 2½–3 poll. latis ensiformibus acuminatis 7-nerviis, ligula triangulari viridi, spadice 3–4-pedali decurvo paniculatim ramoso, ramulis 5–6 pollicaribus glaberrimis recurvis, spathis 6–8 poll. longis cylindraceis appressis obtusis tenuiter fusco-furfuraceis, perianthio late campanulato brevissime 6-lobulato lobulis apiculatis, antheris lineari-oblongis, filamentis longioribus, ovario ellipsoideo, stylo brevi, fructu globoso pallido pericarpo spongioso, semine globoso.

THRINAX excelsa, *Griseb. Fl. Brit. W. Ind.* p. 515, *an Lodd. Cat. Palms* (1849)?

This beautiful Palm has been cultivated for many years in the Palm House of the Royal Gardens under the name *Thrinax excelsa* of Loddiges; but on what authority has not been handed down. The specimen is, no doubt, one of two mentioned by J. Smith in his "Records of Kew" (1880) as being old plants in 1823, and of which he says the native country is doubtful. Latterly the Kew plant in question has been fathered on Jamaica, and as such this very specimen is described by Grisebach in his Flora of the British West Indies. And that this is a correct view of its fatherland is supported by the fact that there is in Kew Herbarium a dried specimen of a spadix perfectly according with that of the spadix of the plant here figured, sent by Mr. Jenman (when Superintendent of the Jamaica Botanical Garden) from woods in the interior of that island. Loddiges, on the other hand, gives Cayenne as the native country of his *T. excelsa*, a country from which no *Thrinax* is now in cultivation. This point of locality may, I fear, never be cleared up, for Loddiges' catalogue contains no description, and a mark attached to the name *T. excelsa* implies that it was a solitary specimen. Furthermore, Loddiges' collection having been long since dispersed, there

is no hope of ascertaining either whether his plant was really from Cayenne, or whether it was specifically identical with the Kew *T. excelsa*. Under these circumstances, my obvious course is to adopt the name of *T. excelsa*, Griseb. (*an* Loddiges?).

When described by Grisebach (in 1864), the height of the stem was seven feet seven inches, and its diameter eight inches; since which it has added three feet three inches to its stature, and two inches to its diameter. The spread of the crown, which consists of about twenty-four leaves, is twenty feet; the length of the petiole is seven feet, and the diameter of the leaves about six feet.

Referring to Patrick Brown's History of Jamaica (p. 191), I find a description of a Palm that answers to this, or to *T. parviflora*, and which probably includes both; it is the Palmete Royale or Palmeto Thatch. Brown says of it, "It covers whole fields in many parts of the island, growing both on the rocky hills and low moist places near the sea, but seems to thrive best in the former. The trunk is called Thatch pole; it stands water well, being never corroded or touched by worms. The petioles are very tough, and are, when split, used for a thousand purposes."

Mr. Jenman sends, besides the spadix of *T. excelsa*, specimens of *T. parviflora*, of which he says that the former grows on limestone rocks in the interior forests of the island, the latter grows on the sea-coast and prefers sand.

T. excelsa flowered in May in the Palm House of the Royal Gardens, and the flowering was followed in November by fully formed globose pale yellowish-white fruits, about half an inch in diameter, with a rather thick dry spongy pericarp and a globose seed, which, however, contained no perfect embryo.—*J. D. H.*

Fig. 1, Branches of flowering spadix and flower; 2, section of ovary, *both enlarged;* 3, portion of spadix with young fruit, *of the natural size.*

M.S. del. J.N. Fitch lith

Vincent Brooks, Day

TAB. 7089.

TIGRIDIA PRINGLEI.

Native of Northern Mexico.

Nat. Ord. IRIDEÆ.—Tribe MORÆEÆ.

Genus TIGRIDIA, *Juss.*; (*Benth. et Hook.f. Gen. Pl.* vol. iii. p. 690.)

TIGRIDIA *Pringlei*; cormo parvo globoso, caule monocephalo, foliis 3–4 alternis ensiformibus plicatis, spathæ valvis exterioribus subæquilongis viridibus, perianthii segmentis exterioribus laminâ magna patula splendide sanguinea præditis, segmentis interioribus laminâ perparva ovata lutea rubromaculata, styli ramis antheris æquilongis, capsulis clavatis.

T. Pringlei, *S. Wats. in Garden and Forest*, vol. i. (1888), p. 388, fig. 61; *Gard. Chron.* 1888, vol. ii. p. 322.

This new *Tigridia* is very nearly allied to the old well-known *Tigridia Pavonia* (*Ferraria Pavonia*, Bot. Mag. t. 532). Its principal botanical difference lies in the size and shape of the blade of the inner segments of the perianth. From a garden point of view it will be welcomed on account of the brilliant scarlet colour of the large spreading blade of the outer segments of its perianth. The first specimen received at Kew came in August, 1883, from Mr. A. Buchan Hepburn, who procured the plant from a height of six thousand feet on the Sierra Madre, in Northern Mexico. It was rediscovered in 1887 by Mr. C. G. Pringle in the province of Chihuahua, and introduced by him to the Botanical Garden of Cambridge in Massachusetts. As *T. Pavonia* is confined to Central and Southern Mexico, it is very likely that *T. Pringlei* will prove more hardy in our English gardens. Our drawing was made from a plant that was presented to the Royal Gardens in 1888 by Messrs. Pringle and Horsford of Vermont, U.S.A., and flowered at Kew last July.

DESCR. *Corm* small, globose; root-fibres cylindrical. *Stem* one or two feet high, bearing a single terminal cluster of flowers and three or four alternate ensiform plicate *leaves*, which are nearly an inch broad at the middle, and taper gradually to the base and apex. *Spathes* three inches long, containing five or six flowers, which open in

succession; outer valves subequal, green, lanceolate or oblong-lanceolate; pedicels nearly as long as the outer spathe-valves. Expanded *perianth* four inches in diameter; segments connivent in a cup at the base, spreading above it; outer segments with a bright scarlet unspotted ovate blade, and a broad cuneate claw, spotted with red on a yellow ground; inner segments with a similarly spotted ovate claw and a very small ovate yellow blade, spotted with red. *Filaments* united in a long cylindrical column; anthers linear, basifixed, half an inch long. *Style-branches* as long as the anthers, emarginate at the apex. *Capsule* clavate, obtusely angled, two or three inches long.—*J. G. Baker.*

Fig. 1, Top of column of filaments, anthers and style-branches; 2, back view of anther:—*both enlarged.*

Tab. 7090.

CABOMBA aquatica.

Native of Tropical America.

Nat. Ord. Nymphæaceæ.—Tribe Cabombeæ.

Genus Cabomba, *Aublet;* (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 46.)

Cabomba *aquatica;* foliis ellipticis, floribus flavis, petiolis pedicellisque puberulis.

C. aquatica, *Aub. Pl. Guian.* vol. i. p. 321, t. 121; *Lamk. Dict.* vol. i. p. 526; *Ill. Gen.* t. 261; *DC. Syst. Veg.* vol. ii. p. 36; *Prodr.* vol. i. p. 112; *Richard Anal. des Fr.* pp. 63, 64, t. 1, f. 83; *A. Gray Ann. Lyc. New York,* vol. iv. p. 46; *Caspary in Mart. Fl. Bras.* fasc. lxxvii. p. 138, t. 37, f. 1–24.

Nectris aquatica, *Willd. Sp. Pl.* vol. ii. 248; *Pers. Synops.* p. 394.

A very interesting water-plant, belonging to a tribe of the Natural Order *Nymphæaceæ*, which tribe consists of but two genera, the present with two (or perhaps more) species, and *Brasenia* with but one. Of the two genera the latter is the most interesting, from the fact of the singular distribution of its solitary species, *B. peltata*. This, after being known for many years as confined to North America and Eastern Australia, was found by Griffith in a single spot in the East Bengal (where also it was gathered, in 1850, by Dr. Thomson and myself), and it has since been found to exist very locally in Japan and Western Africa. In having this wide distribution it resembles many water-plants, but in being local wherever found, it differs from almost all.

Of the species of Cabomba, four only are well defined. One, that here figured, is spread over the still waters of the South American continent from Mexico to South Brazil. Its exact northern limit is not known, but in the southern United States it is replaced by *C. caroliniana*, A. Gray, which differs in the very much narrower leaves, white flowers, and short anthers. The two others are *C. piauhiensis*, Gardn., and *C. Warmingii*, Caspary, both natives of Brazil.

The specimen of *C. aquatica* here figured was raised from seeds sent from Demarara to the Royal Gardens by

Mr. Jenman, Superintendent of the George Town Botanical Garden in 1888, and which flowered in April of the present year. Mr. Watson informs me that the flowers last for but one day, and that none appeared after May.

Descr. *Stems* very long, rooting in the mud, branching under water and giving off leaves of two forms, submerged and floating, both petioled; submerged leaves circular in outline, two to three inches in diameter, five-partite, the segments flabelliform di-tri-chotomously cut into filiform green laciniæ, petiole half to one inch long, glabrous; floating leaves longer petioled, peltate, elliptic, one and a half to two inches in the longest diameter, quite entire, bright green above with a red spot at the insertion of the petiole, young purplish red beneath, old with mottled purple margins. *Peduncles* axillary, longer than the petioles, stout, green, upper part rising above the water and bearing a solitary pale yellow flower half an inch in diameter. *Sepals* three, obovate-oblong obtuse. *Petals* three, as long as the sepals, broadly clawed, ovate cordate obtuse. *Stamens* six, hypogynous, anthers linear-oblong rather shorter than the filaments. *Carpels* one to three, free, fusiform, pubescent, narrowed into as many short styles, with terminal papillose stigmata; ovules two to three, pendulous from the walls of the carpels. *Ripe carpels* about one-third of an inch long, crowned with the persistent styles and stigmas, coriaceous, indehiscent. *Seeds* two to three.—*J. D. H.*

Fig. 1, Flower; 2, petal; 3 and 4, stamens; 5, young fruit; 6, a carpel laid open showing the ovules:—*all enlarged.*

Tab. 7091.

AMORPHOPHALLUS Eichleri.

Native of Western Tropical Africa.

Nat. Ord. Aroideæ.—Tribe Pythonieæ.

Genus Amorphophallus, *Blume;* (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 970.)

Amorphophallus (Hydrosme) *Eichleri;* folio 3-secto segmentis lateralibus 2-partitis terminali 3-partito partitionibus pinnatifidis v. pinnatisectis, foliolis utrinque 2–3-oblongis ovatis obovatisve acuminatis basi cuneatis marginibus undulatis, rachibus late alatis, petiolo tereti lævi viridi, pedunculo brevissimo vaginis latis laxis membranaceis spatham æquantibus, spathæ tubo hemispherico subventricoso sordide albo ore obliquo, intus sanguineo-purpureo infra oram albo, margine dilatato recurvo irregulariter lobulato et undulato fusco-purpureo, spadice subsessili, parte feminea brevi, floribus parvis, parte mascula cylindracea lutea, appendice erecto 4–5-pollicari elongato conoideo basi angustato subrugoso pallide brunneo, ovariis depresso-globosis 2–3 locularibus, stigmate majusculo subgloboso sessili 2–3-lobulato, staminibus cuneiformibus.

Hydrosme Eichleri, *Engler Araceæ* (No. 114), p. 285, t. 10.

According to Engler's monograph, *A. Eichleri* is a native of the Island Fürst Bismarck, in the river Congo, whence living roots were sent in 1880 by Herr Teusz to the Royal Botanical Gardens of Berlin, where the plant first flowered in April, 1882. In 1888 a tuber was received at Kew from Berlin, which sent up a flowering stem in March of the present year, to be followed by a leaf which was fully developed at the end of May. Except in that the leaf is much more fully developed, the sheaths (cataphylls) at the base of the flowering stem very much larger than in Engler's excellent figure, and the stigmas distinctly lobulate, there is no difference between the Berlin and Kew specimen. Like its congeners, the plant emits a horrible stench when flowering.

Descr. *Tuber* depressed globose, rose-coloured (Engler). *Petiole* eighteen inches high, cylindric, smooth, green; leaf-blade trisect, divisions shortly petiolulate, a span long, the lateral bisect, the middle one trisect; segments pinnatifid, rachis broadly unequally winged from the base upwards; leaflets two to three pair, sessile by a broad

base, elliptic-ovate, acuminate, or the lower obovate, dark green with impressed nerves, margins beyond the intramarginal nerve undulate, terminal three or four inches long, lateral shorter less acute. *Peduncle* very short, green, sheaths as long as the spathe, lax, very broadly ovate, acute, concave. *Spathe* one and a half inch high, and as broad across the hemispheric dirty-white striated tube; mouth rather contracted, oblique, margin broadly everted prolonged at one side into a broad tongue-shaped obtuse limb, waved and irregularly crenate or lobulate, dull red brown; interior of spathe mottled with bright red from the base to within half an inch of the everted margin, the intervening space dull white. *Spadix* nearly six inches high, erect; female portion very short; male longer, cylindric, nearly an inch long; appendix an elongate dull pale brown rugose subacute cone contracted towards the base. *Stamens* densely crowded, cuneiform with rounded angles, yellowish, two-celled. *Ovaries* minute, sessile, green, depressed globose, two- to three-celled; cells one-ovuled; stigma globose, two- to three-lobed.—*J. D. H.*

Fig. 1, Reduced plant; 2, portion of leaf; 3, inflorescence, *of the natural size;* 4, base of spadix; 5, stamen; 6, ovary; 7, vertical section of the same. Fig. 2 and 4–7, *all enlarged.*

Tab. 7092.

CLINTONIA Andrewsiana.

Native of California.

Nat. Ord. Liliaceæ.—Tribe Medeoleæ.

Genus Clintonia, *Rafin.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 832.)

Clintonia *Andrewsiana*; caule sesquipedali, foliis 4 magnis oblongis acutis sessilibus prope basin aggregatis, unico reducto mediali, floribus in umbellam terminalem multifloram 2–3 paucifloris lateralibus sæpissime additis dispositis, pedicellis pubescentibus flore subæquilongis, bracteis parvis lanceolatis, perianthio rubro-purpureo segmentis oblanceolato-oblongis basi leviter gibbosis, staminibus perianthio brevioribus filamentis pilosis, ovario oblongo, stylo ovario æquilongo.

C. Andrewsiana, *Torrey Bot. Whipple*, p. 94; *Baker in Journ. Linn. Soc.* vol. xiv. p. 585; *S. Wats. in Proc. Amer. Acad.* vol. xiv. p. 272; *Bot. Calif.* vol. ii. p. 180.

C. Andrewsii, *Wood in Proc. Acad. Philad.* 1868, p. 174.

Clintonia is a genus of baccate Liliaceæ, which contains six species, four of which are North American and two East Asiatic. This is the only species in which the flowers are at all showy. In all the others they are greenish-white. Two of them were figured long ago in the Botanical Magazine (Tabs. 1155 and 1403), both under the name of *Smilacina borealis*. *C. Andrewsiana* is very local, being confined to the coast ranges of California, from Humboldt County to Santa Cruz. No specimen existed at Kew, either in the herbarium or the garden till very lately. Our drawing was made from two plants that flowered last June, one in the herbaceous ground at Kew, and the other in the Botanic Garden at Edinburgh, from which it was kindly sent to the Royal Gardens by Professor Bayley Balfour. It requires to be grown in a shady position in a bog or peat-bed.

Descr. *Rootstock* a short slender rhizome. *Stem* about a foot and a half long, bearing near its base four sessile oblong acute glabrous leaves six or eight inches long, and a single much smaller leaf at the middle. *Flowers* numerous, forming a dense terminal umbel, with usually two or three others lower down on the peduncle; pedicels

pubescent, about as long as the flowers; bracts small, lanceolate. *Perianth* dark claret-purple, half an inch long; segments oblanceolate-oblong, obscurely gibbous at the base, falcate from below the middle. *Stamens* much shorter than the perianth; filaments pilose; anthers oblong. *Ovary* oblong, with eight or ten ovules in each cell; style as long as the ovary; stigma capitate. *Fruit* baccate.—*J. G. Baker.*

Fig. 1, Front view of anther; 2, back view of anther; 3, pistil; 4, horizontal section of ovary:—*all more or less enlarged.*